Centralized Purchasing System Manual

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2/19/2010

ihcda

Indiana Housing & Community Development Authority

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Welcome to the Home Energy Conservation Program's Centralized Purchasing System

Welcome to Centralized Purchasing!

The Indiana Housing and Community Development Authority (IHCDA) is excited to launch the much-anticipated Centralized Purchasing System segment of the Home Energy Conservation (HEC) Program! We at IHCDA have worked hard with our partners to create a user-friendly system that meets the needs of sub-grantees, handles the increased volume of homes weatherized, and provides the detailed reporting necessitated by the American Reinvestment and Recovery Act (ARRA) guidelines. We look forward to working with you for the duration of the HEC Program!

What is Centralized Purchasing?

Centralized purchasing is similar to bulk buying in that large quantities of a product are bought at a lower price-per-item than is available if buying items in smaller quantities. The State uses centralized purchasing to improve leverage and, ultimately, benefit the overall State budget and create savings for tax payers. In this case, the State was able to use its leveraging power to secure quality products at significant savings, thus maximizing the number of homes that will receive weatherization work.

Why Centralized Purchasing? Why now?

Historically, The State of Indiana weatherization program has left purchasing decisions for materials installed in homes to the discretion of the designated sub-grantees. With the extraordinary amount of funding from ARRA, the Governor saw an opportunity to use the State's bulk buying power to gain significant savings on the high-cost and high-volume materials purchased with HEC Program dollars. As a result, IHCDA and the Indiana Department of Administration (IDOA) have developed relationships with several manufacturers of HEC products to provide opportunities for sub-grantees throughout the State to access high-quality HEC materials at substantial cost savings to the Program. To that end, IHCDA and IDOA have created a centralized purchasing process by which sub-grantees can access furnaces and fiberglass insulation. By entering agreements with Koch Air (Carrier furnaces), Trane (furnaces), Knauf (fiberglass insulation), and Langham Logistics (third-party logistics provider), we are working to ensure a seamless transition to the new centralized purchasing system.

Introducing Our Partners

Langham Logistics

Langham Logistics is providing all shipping and handling, product ordering, and reporting services for the State of Indiana for the centralized purchasing program. For sub-grantees, Langham has set-up an order site dedicated to centralized purchasing and through which all orders for furnaces and blow-in fiberglass insulation will be placed. Langham has also provided a call center that is ready to answer any questions sub-grantees might have about placing an order, delivery, will call, or products available.

Koch Air

Koch Air is a distributor of Carrier furnaces and is providing the State of Indiana with 40,000, 60,000, and 80,000 Btuh natural gas furnaces (see specification sheets in Appendix A). Koch Air has four locations ready to serve the sub-grantees with parts and supplies and answer technical questions.

Trane

Trane is providing the State of Indiana with 40,000, 60,000, and 80,000 Btuh natural gas furnaces (see specifications sheets in Appendix A). Trane has nine distribution locations around Indiana, as well as eight American Standard locations, to provide sub-grantees with parts and supplies. Trane's technical staff is ready to answer any questions that come up in the field.

Knauf Insulation

Knauf Insulation is providing the State of Indiana with 32 pound bags of blow-in fiberglass insulation. For coverage information, please see Appendix A. Knauf will provide technical assistance and detailed product information to all sub-grantees and installers.

Centralized Purchasing: At-A-Glance

When can we start?

You may begin placing orders on the Langham Logistics' webpage dedicated to HEC Program centralized purchasing on **Monday, November 16, 2009!** The web address for the Langham site is: www.elangham.com. See the "how to order" section for further order instructions.

What products are available in the Centralized Purchasing System?

The following products must be purchased on the Centralized Purchasing website:

- Furnaces from Koch Air (Carrier furnaces)
- Furnaces from Trane
- Fiber glass insulation from Knauf Insulation

Note: The brand of furnace you purchase is your choice. Specification sheets are available for you to review in Appendix A of this manual.

The following products may be purchased at the discretion of the sub-grantees:

- Cellulose insulation
- Any accessories necessary to install furnaces or insulation
- Water heaters*

Who may use the system?

Each sub-grantee will have a unique log-in name and password to order products off Langham Logistics' order site. Only personnel determined by the sub-grantee may order products from the website. Contractors MAY NOT order products from the website.

Where will products be delivered?

All orders will be delivered to the sub-grantee or to the contractor. Orders will NOT be delivered to the client's home.

How will products be tied to specific homes?

All products will be tied to a specific address via serial number. This information will be included on the invoice sub-grantees receive from Langham. Auditors will be checking to make sure the serial numbers of the products installed match the correct address.

*Purchasing option for water heaters: As a courtesy, sub-grantees have the option to purchase water heaters at discounted prices through the State of Indiana's MRO (maintenance, repair and operations equipment) contractor, Fastenal Company (Quantity Purchase Agreement, QPA# 11179). In addition to water heaters, sub-grantees are eligible (but not under obligation) to purchase MRO products at the State's negotiated discount rates. Water heaters are available for delivery or pick-up from any of Fastenal's 86 Indiana locations. For more information, please contact Mike Fellows at (616) 935-1258 or jfellows@festenal.com.

Contact Information

INDIANA HOUSING AND COMMUNITY DEVELOPMENT AUTHORITY
Chelsey Wininger
Centralized Purchasing Coordinator
Phone: 317-232-5589
Hours Available: 9am-5:30pm
Email: chwininger@ihcda.in.gov

Contact Chelsey about the following issues:

- General centralized purchasing questions
- Centralized purchasing requirements
- Product exceptions
- Emergency replacements
- General warranty questions

LANGHAM LOGISTICS
Call Center
Phone: 866-616-3528
Hours Available: 8am-5pm
Email: hec@elangham.com

Contact the Langham Logistics call center about the following issues:

- Placing orders
- Scheduling deliveries
- Will call
- Bulk purchases

KNAUF INSULATION
Stephanie Horen
Customer Service Representative
Phone: 1-800-825-4434 x8323
Hours Available: 8am-5pm
Email: steph.horen@us.knaufinsulation.com

Contact Stephanie about the following issues:

- Insulation questions
- Warranty questions
- Additional product information

KOCH AIR
Bruce Davis
Technical Development Manager
Phone: 812-962-5235

Hours Available: 7:30am-5pm
Email: bdavis@kochair.com

Contact Bruce about the following issues:

- Technical questions about Carrier products
- Training needs for contractors

Lana Wroe
Warranty Specialist
Phone: 812-962-5221
Hours Available: 7:30am-5pm
Email: lwroe@kochair.com

Contact Lana about the following issues:

- Warranty questions for both furnace models
- Registration of a Carrier furnace for extended warranty coverage

TRANE
Niles Fox
State of Indiana Account Manager
Phone: 1-800-285-2487
Hours Available: 8am-5pm
Email: nfox@trane.com

Contact Niles about the following issues:

- Concealed damages

Allen Graber
Field Service Representative
Phone: 317-203-6785
Hours Available: 7:30am-5pm
Email: Allen.Graber@trane.com

Contact Allen about the following issues:

- Technical questions about Trane products
- Warranty questions
- Replacement parts

Product Models and Prices

Logistics Fees

Langham's logistics fees are as follows:

- $183 fee on all furnaces
- $7 per bag of insulation (36 bags of insulation per pallet)

Furnaces from Koch Air (Carrier furnaces)

Koch Air is offering the State two different high-efficiency furnace models. Both models are 4 way multipoise (upflow, downflow, horizontal left, horizontal right) fixed-capacity direct-vent (2-Pipe) and non-direct vent (1-Pipe) condensing gas furnaces. Specifications for each model are located in Appendix A.

General information about the furnaces is as follows:

- MCB model furnaces will be available at the start of the centralized purchasing program. MXB furnaces will be available as a back-up functional equivalent.
- Only the models available for purchase will show on the order website—out-of-stock items will not appear on the order drop-down menu.
- MCB and MXB furnaces have different warranty processes. Please refer to the "warranty" section of this manual for procedures.
- Koch Air offers liquid propane (LP) kits and mobile home (MH) conversion kits for all furnace models. On the order site, furnaces with liquid propane kits are designated with an "L" at the end of the model number; furnaces with mobile home kits are designated with an "M" at the end of the model number.
- The table below outlines the base unit price (with no kits), the base unit price with logistics fees, and the additional LP and MH kit prices.
- The shaded cells indicate the final prices, including all shipping and handling fees.

CARRIER FURNACES (FROM KOCH AIR)					
Model	Btuh Output	Price Per Unit	with logistics fee	with LP Kit	with MH Kit
58MCB040-108	40,000 Btuh	$560	$743	$751	$776
58MCB060-112	60,000 Btuh	$607	$790	$798	$823
58MCB080-112	80,000 Btuh	$626	$809	$817	$842
58MXB040F108	40,000 Btuh	$560	$743	$751	$776
58MXB060F112	60,000 Btuh	$607	$790	$798	$823
58MXB080F112	80,000 Btuh	$626	$809	$817	$842

Furnaces from Trane

Trane is offering the State high-efficiency upflow/horizontal and downflow/horizontal condensing gas furnace models. Specifications for each model are in Appendix A.

General information about the furnaces is as follows:

- Trane offers mobile home (MH) conversion kits for all models. On the order site, furnaces with mobile home conversion kits are designated with an "M" at the end of the model number.
- The table below outlines the base unit price (with no kits), the base unit price with logistics fees, and the additional MH kit prices.
- The shaded cells indicate the final prices, including all shipping and handling fees.

TRANE FURNACES					
Model	Btuh Output	Flow Direction	Price Per Unit	with logistics fee	with MH Kit
TUC1B040A9241A	40,000 Btuh	Up	$671	$854	$870
TDC1B040A9214A	40,000 Btuh	Down	$705	$888	$904
TUC1B060A9361A	60,000 Btuh	Up	$693	$876	$892
TDC1B060A9361A	60,000 Btuh	Down	$725	$908	$924
TUC1B080A9421A	80,000 Btuh	Up	$722	$905	$921
TDC1B080A9421A	80,000 Btuh	Down	$756	$939	$955

Insulation from Knauf Insulation

Knauf is offering the State blow-in fiber glass insulation. Specifications can be found in Appendix A.

General information about the furnaces is as follows:

- Each bag of insulation is 32 pounds.
- Insulation comes by the pallet with 36 bags per pallet.
- If insulation is picked up at will call, it may be purchased by the bag, rather than by the pallet.
- The shaded cells indicate the final prices, including all logistics fees.

KNAUF INSULATION				
SKU	Model	Brief Description	Unit Price	Price with logistics fee
789	**Jet Stream 73.3 Blowing Wool Insulation**	32 pound bag of blow-in fiberglass insulation	$11.94	$18.94

Placing an Order and Invoicing Procedures

Placing an Order

A step-by-step guide to placing your order on the Langham website and using the bulk purchase form is located in Appendix B. Before you order, note that:

- All centralized purchasing orders can be made in the following ways:
  - on the Langham website: www.elangham.com
  - through the call center: 866-616-3528
  - by faxing the bulk purchase form on the Langham website to: 866-616-3528
  - by emailing the bulk purchase from on the Langham website to: hec@elangham.com
- The bulk purchasing order form can be found under the "customer news" box on the main customer portal screen. From there:
  - Open the "Excel order form" link
  - Double click on the Excel icon that appears in the upper left corner of the pop-up box. This opens the bulk order form.
  - Instructions for the form are on the first tab. The order form is on the second tab
- All sub-grantees will receive login IDs from Langham. The only people who should know the login ID and password are those authorized to place orders (administrators or their designees or auditors—NOT contractors)
- Any questions about ordering procedures should be directed to the Langham call center at: 866-616-3528 or hec@elangham.com. The Langham call center staff is prepared to help you with any and all questions regarding placing an order.

Invoicing Procedures

Because of the goals of the American Recovery and Reinvestment Act and the tight reporting requirements surrounding the allotted weatherization funds, IHCDA must change invoicing procedures.

Invoicing Timeline

- Sub-grantees have **45 days** from the date an order is received to pay the invoice for that order. This ensures that the money goes out in a timely manner and jobs are created for local contractors.
- If the invoice is not paid by day 30, the sub-grantee will receive payment reminder notification from Langham Logistics. If the vendor is not paid by day 45, IHCDA will withhold future funding until the sub-grantee's account with Langham is brought current.
- Late payments will be documented by IHCDA and will be a factor in the competition for the next round of ARRA funding.
- LIHEAP and regular Department of Energy funding will NOT be subject to the 45 day invoice payment timeline.

Blow-in Fiberglass Insulation Invoicing Policy

On both the bulk order and single order entry screens, the pallet quantities required to order are listed; however, the system will not automatically force those quantities.

- In the event that a sub-grantee does not order a pallet quantity of insulation, the warehouse picking process will automatically make the order a full pallet quantity and thus appear on the invoice accordingly.
- This means that the order form you fill out will show the quantity of bags you entered. However, on the invoice you're sent from Langham, the quantity of bags purchased will automatically round up to the next full pallet quantity (36 bags per pallet—see Appendix A for specifications regarding coverage area per bag).
- The full pallet quantity will NOT show up on the order screen—only on the invoice you receive from Langham after shipment.
- Because of the computer system used by Langham and concern for the integrity of the bag holding the insulation, only full pallet (36 bag) quantities of fiberglass insulation can be shipped.
- Only will call pick-ups may receive less-than-pallet quantities.

Delivery, Returns, and Replacements

Delivery Procedures

- Products may be delivered to the following locations:
  - The sub-grantee
  - The contractor
- Products WILL NOT be delivered to a client's home
- All orders entered before 10am will be guaranteed next-day delivery
  - Sub-grantees may request a two-hour delivery window for Langham to drop off the order
  - Langham will work to honor the requested two-hour delivery window, but cannot guarantee the delivery will be made during it
  - Sub-grantees will receive an email confirmation from Langham that states the two-hour delivery window in which sub-grantees will receive their order. This email will be sent later on the same day the order is placed.
- Sub-grantees may order products and specify a delivery time and date other than the next business day
- Please list any and all people authorized to sign for the delivery in the "comment" section on the online order form. People not listed as authorized signers will not be allowed to accept the delivery. Without listing this information, only the person submitting the order will be allowed to sign for it.

Will Call Procedures

- Langham has set up a will call option for the centralized purchasing system, which means sub-grantees may order products and pick them up at Langham's warehouse
- Will Call will be marked outside the facility with signs for the customer to follow. Langham's warehouse address is as follows:
  5335 West 74th Street
  Indianapolis IN 46268
- Will Call hours are 7 am – 5 pm EST, Monday-Friday
- Will Call orders can be picked up in less than pallet quantities
- As a standard operating procedure, the drivers license number of the person picking up the product will be recorded
- As a standard operating procedure, the license plate number of the person picking up the product will be recorded
- Will call orders must be placed through centralized purchasing web order entry or call center
- All charges for shipping and handling will apply to all will call orders
- No appointment is necessary, however a two hour notification before pick-up is required

Return Procedures

- If the sub-grantee ordered the wrong product:
  - Option 1:
    - Call the Langham call center (866-616-3528), say the wrong product was ordered, and arrange for Langham to pick it up from the sub-grantee

        - Langham will pick up the product and return it to their warehouse for an additional $183 logistics fee
        - Langham will deliver the correct product to the sub-grantee on the next business day
    - Option 2:
        - The sub-grantee may keep the wrongly ordered product for use on another house
        - The sub-grantee must call the Langham call center, explain that the product ordered was a mistake but that the sub-grantee is keeping it for use on another house
        - When the product is installed, call Langham with the serial number of the product and the address at which it was installed so that reports will correctly tie the product to the address
    - Exception: if there is an extreme circumstance (a person will be without heat, etc), the correct furnace will be shipped to the sub-grantee immediately. Langham is willing to work with the sub-grantees in these situations.
- If sub-grantee received the wrong product from Langham:
    - If the driver notices that the wrong product was shipped, he will not unload it from the truck. The correct product will be shipped on the next business day.
    - If the sub-grantee receives the wrong product and the driver has left:
        - Call the Langham call center (866-616-3528) and report that the wrong product was delivered
        - Langham will pick up the product at no charge to the sub-grantee and deliver the correct product on the next business day
        - Exception: if there is an extreme circumstance (a person will be without heat, etc), the correct furnace will be shipped to the sub-grantee immediately. Langham is willing to work with the sub-grantees in these situations.
- If the product you receive is damaged:
    - If goods are damaged at the time of unloading, the driver and sub-grantee recipient will make note and agree not to receive
    - The driver is being told by Langham not to unload damaged goods and the hope is that the double quality control being done at Langham as the product goes on the truck will eliminate any damage between our dock and the sub-grantee
    - Any damage done by Langham will be handled by Langham—the sub-grantee will not be charged for shipping and will receive a new product on the next business day

Want to cancel your order? Consider this first.

Before you cancel your order from centralized purchasing, consider the following:

- Can I use the product(s) from this order for another client?
- Is it after 3pm?

Q: Can I use the product(s) from my order for another client?
A: Yes

- The products you order from Langham are tied to a specific address when they leave the warehouse; however, the address to which they are tied can be changed to a new address.
- To change the home address to which the product is tied, call the Langham call center and explain that the product you ordered is going to a different address.

Q: But what if I ordered a furnace with a conversion kit that I don't need?
A: You can use the furnace on any home.

- All furnaces available through centralized purchasing are the same base model, even if you order one with a conversion kit. If you order a conversion kit, it simply comes as an addition to the base furnace model.
- Conversion kits cost an additional $8-$16 (depending on the furnace brand) to the price of the base furnace model; discarding or saving for future use an unneeded conversion kit is cheaper than canceling an order and incurring additional logistics fees

If you choose to cancel your order after 3pm:

- If it is after 3pm, your order has already left the Langham warehouse.
- Canceling your order after 3pm means that you will have to pay an additional logistics fee to return the product to Langham's warehouse. In sum, you will have to pay two logistics fees: one outbound fee and one inbound fee.

Still want to cancel your order?

- Call the Langham call center to cancel your order at: 866-616-3528
- State whether you want to cancel your entire order or just a specific item from the order
- Understand that your agency will have to pay an additional logistics fee on the canceled item(s)

Full Unit Replacements and Replacement Part Procedures

- All full unit replacements and replacement parts will be handled through the manufacturers directly. Warranty replacement processes are outlined in the "warranty" section of the manual.

Emergency Replacements

- If a furnace to be replaced presents an immediate, life threatening, and unavoidable health and safety situation, contact Chelsey at IHCDA immediately at:
  - Phone: 317-232-5589
  - Email: chwininger@ihcda.in.gov
- Chelsey will discuss the situation with Paul Krievins and Ray Judy to determine the best course of action and if a replacement furnace may be bought outside the centralized purchasing system.

Warranty Processes

Parts Warranty Process for a Carrier Furnace from Koch Air:

Warranty Information

- All Carrier furnaces come with a standard 5 year warranty for parts
- 58MCB models will have 10 year parts warranty if registered at www.kochair.com
- 58MXB models will have 10 year parts warranty if registered at the www.carrier.com website
- All units come with a lifetime warranty for heat exchangers when registered at the Carrier.com website
- The sub-grantee MUST register ALL equipment within 60 days of installation to extend the parts warranty coverage to years 6-10 (see next section for registration instructions)

Warranty Replacement Parts Process

1. Step 1: Contractor determines there is a failed part and calls a Koch Air location (see toll-free telephone numbers below) to order a replacement part.
2. Step 2: Contractor determines how he will receive the part. The options are:
    - UPS next day delivery to the sub-grantee's office or the contractor's address
    - Immediate pick-up at a Koch Air Parts and Supplies store
    - Next day delivery on a Koch Air truck (delivery must be included in daily route—call Lana Wroe at 812-962-5221 to see if you qualify)
    - The contractor must pay for the cost of shipping as part of the labor warranty service fee
3. Billing Information
    - Option 1- cash account
        - With this type of account, the contractor must pay for all parts at the time of order
        - The contractor files a warranty claim with Koch Air and will be reimbursed with a check once Koch Air received credit from Carrier.
    - Option 2- open account with Koch Air
        - Installing contractor opens an account with Koch Air prior to, or at the time, a replacement part is needed
        - Contractor may order a part online and have it shipped to the sub-grantee or the contractor's address, or arrange to pick up the part at a Koch Air Parts and Supplies location
        - Upon pick up or delivery of the replacement part, the contractor files a service credit application (SCA) online or by paper. Paper claims should be sent to:

            Koch Air
            Warranty Department
            P.O. Box 1167
            Evansville IN 47706

Toll-free Telephone Numbers and Addresses for all Koch Air HVAC Supply Locations (see full addresses in Appendix C)

- Indianapolis: 800-989-3722, or 317-248-5110
- Fort Wayne: 866-883-1221, or 260-483-1221
- Evansville: 877-456-2422, or 812-962-5200
- Louisville (servicing Southeast Indiana): 800-989-6176, or 502-491-9970

Parts Warranty Process for a Trane furnace:

Warranty Information

- All units come with a standard 10 year warranty for parts
- All units come with a 20 year warranty for heat exchangers

Warranty Replacement Parts Process

1. Step 1: Contractor determines there is a failed part and calls one of Trane's Parts and Supplies Distributors at: **1-800-285-2487**
2. Step 2: Contractor completes and submits a Warranty and Compressor Request (WCR) form, found in Appendix D.
    - Form can be found on the Langham Logistics webpage dedicated to the HEC centralized purchasing system also
    - Form can be submitted electronically (preferred) via www.comfortsite.com. You must be signed up with a username and password to use ComfortSite (registration is on the ComfortSite homepage).
    - Form can be emailed to:
        - nfox@trane.com
        - srbrown@trane.com
    - Form can be printed and faxed to: 317-466-3315
    - Form can be printed and mailed to:

      Trane
      5355 North Post Road
      Indianapolis IN 46216
      Attn: Parts
3. Step 3: The part is either picked up at a Trane distribution center or delivered to the contractor
    - The contractor must pay for the cost of shipping as part of the labor warranty service fee
    - Trane distributors are located in (see full addresses in Appendix C):
        - Indianapolis
        - Plainfield
        - Bloomington
        - Lafayette
        - South Bend
        - Fort Wayne
        - Evansville
        - Louisville, KY
        - Daleville

- Replacement parts may also be obtained from American Standard suppliers. Distributors are located in (see full addresses in Appendix C):
  - Indianapolis
  - Bloomington
  - Kokomo
  - Elkhart
  - Fort Wayne
  - Lafayette
  - Muncie
  - Terre Haute

4. Billing Information
   - If a WCR form has been submitted by the time the part is picked up or delivered, the contractor will not be billed
   - If the contractor has not yet submitted the WCR form, the contractor will be billed for the part and will receive a credit at a later date when Trane receives the completed WCR form.
     - If the contractor has a registered account: he will receive a credit on his account.
     - If the contractor has a cash account: he will receive a check from Trane to reimburse him for the purchase

Warranty on Fiberglass Insulation

- Fiberglass insulation will come free from defects and perform according to specifications when installed properly by the contractor
- Warranty is effective for one year from the date of installation
- Should the product be defective, contact Knauf at: 1-800-825-4434 x8323. Warranty replacement will take place outside of Langham's centralized purchasing system.

Warranty Service Fee Information

IHCDA will permit contractors to charge a warranty service fee on all furnaces installed to cover all warranty work for one year. This fee is at the discretion of the Administrators but may not exceed $75 per unit installed.

Concealed Damage Procedures

If a furnace arrives with visible damage to the packaging:

- Sign "damaged" with the carrier
- Langham will handle the replacement and pick-up of furnaces with visible external damage

If a furnace arrives with no visible external damage, but concealed damages exist, do not return the product to Langham!

If the furnace is a Carrier furnace from Koch Air-

- Contact Tom Ancelet, Koch Warehouse Manager, within 3 days of receipt of the product, notifying him of the concealed damage
  - Email: tancelet@kochair.com
  - Phone: 317-248-5100 x7556
- Tom will notify the agency of which Koch warehouse to return the product. Do not return the product to Langham.
- If the furnace is inspected and Koch determines that the product did have concealed damaged, a credit will be issued to Langham from Koch and to the agency from Langham
  - If the damage is determined to be caused by something other than concealed damaged, the resolution will be determined on a case-by-case basis
- The replacement furnace will be ordered through Langham using the normal furnace ordering process

If the furnace is a Trane furnace-

- Contact Niles Fox at: 1-800-285-2487
- Specify that you are calling about concealed damage as part of the State of Indiana's Home Energy Conservation Program
- Arrange for the pick-up of the old furnace and delivery of the new furnace directly with Trane.

**Claims for any issues other than concealed damage should be handled through the warranty process as described in the warranty procedures and policies published for this program.

FAQ's about Centralized Purchasing

1. Mobile home furnaces are not offered as part of centralized purchasing. What should I do?

   Answer: Although mobile home-specific furnaces are not offered as part of centralized purchasing, all furnace models included in centralized purchasing can come with mobile home conversion kits. On the Langham order page, select the furnace model ending with "M" to have the conversion kit included with your furnace.

   If the furnaces with conversion kits will still not work in a particular mobile home, you may go outside of the centralized purchasing system to get a mobile home specific furnace. Please note in the client's file why a furnace with a conversion kit would not work in the client's home. This note is for monitoring purposes.

2. I only need 12 bags of insulation for a job, but I have to buy a whole pallet with the Langham system. What do I do with the extra bags?

   Answer: There are several options here:

   Option #1- Order insulation for multiple homes at the same time
   This option allows agencies to minimize overages. You may order insulation for multiple houses at the same time through the centralized purchasing system. The system will read the number of bags of insulation you enter on the order form and automatically round up to the next full pallet quantity. For example, you may order 12 bags for one house, 12 bags for another, and 12 bags for the third and the system will automatically send a full 36 bag pallet.

   Option #2- Track the overages
   You may use the excess insulation from your order in another ARRA home—just track the overages as inventory. The extra insulation may ONLY be used in ARRA-funded homes. It is the responsibility of the agency to keep track of how many extra bags of insulation are left from a particular order and where those bags ultimately go.

   This option also allows agencies to have a small supply of extra insulation on hand should a contractor underestimate the number of bags needed for a particular home. Again, the extra bags may only go into ARRA homes and the agency must track into which house the extra bags are installed. Langham has added a report titled "insulation overages" to make tracking excess insulation easier for sub-grantees. This report is found on the existing "order summary" report.

   Option #3- Will Call
   You may pick up less-than-pallet quantities of insulation from Langham's will call. The order will still have to placed through the online order page or call center. We know this option may not be practical for your agency due to distance, so consider options #1 and #2.

   **IMPORTANT!- All insulation purchased with ARRA funds must go into an ARRA home.

3. What is the cut-off time for next day delivery?

   Answer: Orders must be placed by 10am EST for guaranteed next day delivery.

4. I have an emergency furnace replacement situation, but the 10am deadline has passed. What should I do?

   Answer: If there is an immediate, life-threatening, or unavoidable health situation or a no heat situation, call Chelsey to explain. Then, call the Langham call center (866-616-3528), tell them you have an emergency situation, and place your furnace order. Langham will generously work with sub-grantees in emergency situations and make sure that you get your furnace delivered ASAP.

5. I'm getting a lot of marketing materials and communications from vendors wanting to do business with my agency for weatherization. Who is legitimate and who is trying to cash in on stimulus dollars?

   Answer: Koch Air/Carrier, Trane, and Knauf insulation will contact your agencies with product information and marketing material. This is allowed under their contracts with the State. While these companies may contact you with marketing material, IHCDA does not endorse or otherwise promote one brand of furnace over another. Sub-grantees may choose whichever brand they prefer. Sub-grantees are only required to buy the base model furnaces from the State—accessories can be purchased at the sub-grantee's discretion. The furnace vendors have given a list of supplies to sub-grantees for marketing purposes only. Sub-grantees are NOT required to purchase accessory parts from the furnace vendors, but may do so at their choosing. Fiberglass insulation and base model furnaces are required to be bought through centralized purchasing.

6. What is the Langham website address and call center number?

   Answer: The Langham web address is: www.elangham.com. From here, follow the step-by-step ordering instructions included in your program manual. You can also call the call center to place your order at: 866-616-3528.

7. I'm using the username and password Chelsey gave me to login to the Langham site but it won't let me get to the order page. What's the deal?

   Answer: The issue could be one of two things here:
   A. The username and password are case sensitive. Be sure the letters are in the correct case.
   B. Your pop-up blocker is on. Be sure to adjust your setting to allow pop-ups on the Langham site.

8. I want to order insulation. I enter "1" in the quantity box for one pallet, right?

Answer: The Langham system is set up to read the number of *bags* of insulation you want to order, not pallets. Please enter the number of bags your need in the quantity field. The system will automatically round up to the nearest full pallet quantity (36 bags).

9. I need an electric furnace but they aren't offered through centralized purchasing. What should I do?

   Answer: You may go outside of the centralized purchasing system to buy electric furnaces.

10. Can I use the centralized purchasing system to order products for non-ARRA homes?

    Answer: At this point in time, no. However, this is an issue that will be revisited in 2010, depending on interest.

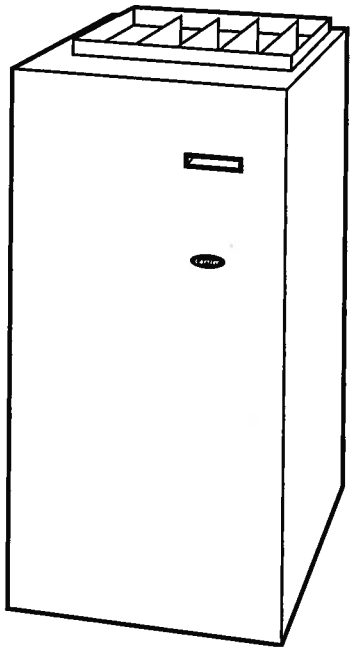
Appendix A- Product Specifications

Carrier Furnaces from Koch Air

58MCB
4–WAY MULTIPOISE FIXED–CAPACITY CONDENSING GAS FURNACE
Input Rates: 40,000 thru 138,000 Btuh

Carrier®
Turn to the Experts.

Product Data



A05104

HIGH EFFICIENCY AND FLEXIBILITY DESIGNED TO MEET THE NEEDS OF NEW HOMES

The model 58MCB combines high efficiency with flexibility to meet the changing needs of new home construction. The unique 4-way, multipoise design of the 58MCB allows for installation in upflow, downflow, horizontal left, and horizontal right orientations, meaning it is perfect for a variety of installation applications. With the exception of the 140 size unit, all sizes of the 58MCB can be installed in a manufactured (mobile) home when the optional kit is used and in installations with elevations up to 10,000 ft (140 size unit limitation 7,000 ft). The furnace is factory configured for upflow application but can easily be made ready for downflow or horizontal installation. With the exception of the 140 size, all sizes can be installed with 2-pipe or 1-pipe venting. The 140 size can be installed only as a 2-pipe system.

Horizontal applications offer the advantage of reduced space requirements by locating the furnace in an attic or crawlspace, freeing space formerly dedicated to a furnace or utility room.

The 58MCB is specifically designed to meet the needs of home builders and new home owners. Home builders benefit from the 58MCB's unmatched flexibility and by building a reputation of using quality appliances in homes. Home owners benefit by energy savings from one of the most important home appliances.

The components of the 58MCB represent the finest in the industry. Hot surface ignition (HSI) and a control center provide reliable and efficient ignition. The combustion inducer is unique in that efficient operation is achieved in any type of installation. Standard 2-in. (51 mm) PVC pipe connects the combustion-air and vent pipes to the furnace.

The 58MCB is a standard part of a quality-built new home. This high efficiency furnace will provide years of quality service to home builders and home owners alike.

As with other Carrier furnaces, this model is designed to work as a part of the total home comfort system which includes elements for cooling, air cleaning, humidification, ventilation, and zoning.

58MCB FEATURES / BENEFITS

Serpentuff™—Exclusive Serpentuff coating, a patented polypropylene laminate is used on the secondary heat exchanger.

Power Heat™ Igniter—The Carrier unique SiN igniter is not only physically robust but it is also electrically robust. It is capable of running at line voltage and does not require complex voltage regulators as do other brands. This unique feature further enhances the reliability of the 58MCB gas furnace and continues Carrier's tradition of technology leadership and innovation in providing a reliable and durable product.

Control Center—Controls sequencing and furnace operation. Equipped with a component test feature and status indicator light to assist in troubleshooting. Control times blower start after main burners ignite to eliminate cold air blowing into rooms.

Direct or Non-direct Venting—The 58MCB can be installed as a 1 pipe-Non- Direct vent or 2 pipe/Direct vent furnace except the 140 size which can be installed as 2-pipe only. This provides added flexibility to meet diverse installation needs.

Adjustable Blower Speed—For precise airflow selection of heating or cooling operation.

Casing—One piece, seamless wraparound construction of prepainted galvanized steel resists corrosion.

Combustion Products Venting—The combustion-air and vent pipes can terminate through a side wall or through the roof when used with a factory authorized vent termination kit.

Insulation—Foil-faced insulation in heat exchanger section of the casing minimizes heat loss.

Certifications—The 58MCB units are CSA (A.G.A. and C.G.A.) design certified for use with natural and propane gases. The furnace is factory-shipped for use with natural gas. A CSA (A.G.A./ C.G.A.) listed gas conversion kit is required to convert furnace for use with propane gas. The efficiency is GAMA efficiency rating certified. The 58MCB meets California Air Quality Management District emission requirements. Except for the 140 size unit, all sizes of the 58MCB can be installed in a manufactured (mobile) home when the optional kit is used. Refer to Vent Table for elevation limitations.

Quality Registration—The 58MCB is engineered and manufactured under an ISO 9001 registered quality system.

MODEL NUMBER NOMENCLATURE

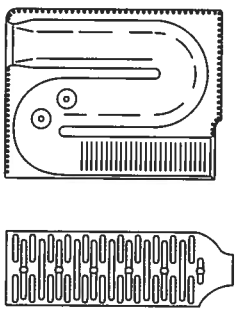
58MCB **040** **100** **08**

4-Way Multipoise Fixed-Capacity Direct-Vent (2-Pipe) and Non-Direct Vent (1-Pipe) Condensing Gas Furnace

Input Rate
040 — 40,000 Btuh
060 — 60,000 Btuh
080 — 80,000 Btuh
100 — 100,000 Btuh
120 — 120,000 Btuh
140 — 138,000 Btuh

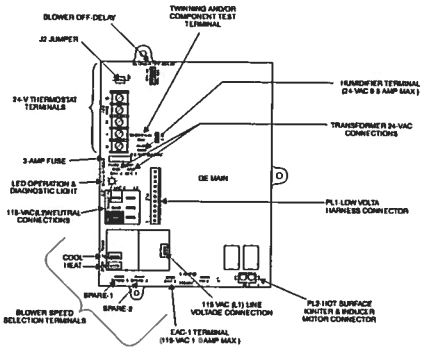
Series

Cooling Size Airflow
(Nominal 400 CFM per 12,000 Btuh Cooling)
08 — 800 CFM
12 — 1200 CFM
16 — 1600 CFM
20 — 2000 CFM



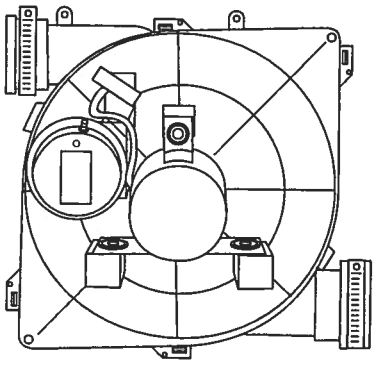
A92505

HEAT EXCHANGERS



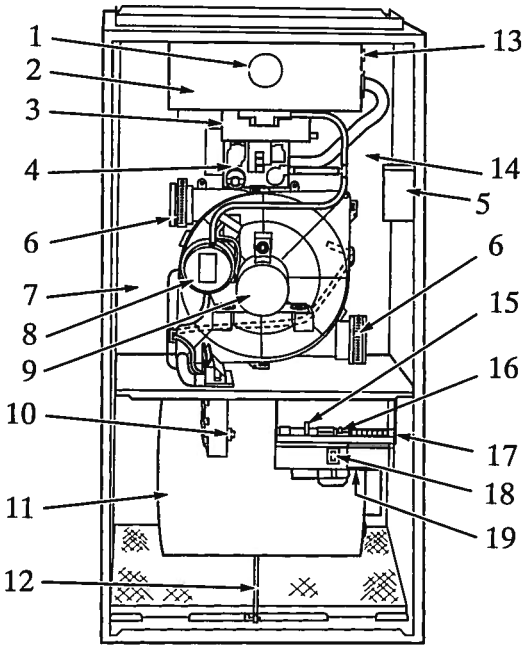
A02100

CONTROL CENTER



A02172

INDUCER ASSEMBLY



A02173

NOTE:

- The 58MCB Furnace is built for use with natural gas. The furnace can be converted for propane gas with a factory-authorized and listed accessory conversion kit.
- Control location and actual controls may be different than shown above.

1. Burner sight glass for viewing burner flame.
2. Burner assembly (inside), operates with energy-saving, inshot burners and hot surface igniter for safe, dependable heating.
3. Combustion-air intake connection to ensure contaminant-free air (right or left side).
4. Redundant gas valve, safe, efficient, features 1 gas control with 2 internal shutoff valves.
5. Junction box for 115-v electrical power supply. (right or left side)
6. Vent outlet uses sealed PVC pipe to carry vent gases from the furnace's combustion system (right or left side).
7. Secondary condensing heat exchanger (inside), wrings out more heat through condensation of gases. Constructed with polypropylene-laminated steel to ensure durability.
8. Pressure switch ensures adequate flow of flue products through furnace and out vent system.
9. Inducer motor pulls hot flue gases through the heat exchangers, maintaining negative pressure for added safety.
10. Condensate drain connection collects moisture condensed during the combustion process.
11. Heavy-duty blower circulates air across the heat exchangers to transfer heat into the home.
12. Air filter and retainer may be used for side or bottom return application.
13. Rollout switch (manual reset) to prevent overtemperature in burner area.
14. Primary serpentine heat exchanger (inside). Stretches fuel dollars with the S-shaped heat-flow design. Solid weld-free construction of corrosion-resistant aluminized steel means reliability.
15. A 3-amp fuse provides electrical and component protection.
16. Light emitting diode (LED) on control center. Code lights are for diagnosing furnace operation and service requirements.
17. Control center.
18. Blower access panel safety interlock switch.
19. Transformer (24v) behind control center provides low-voltage power to furnace control center and thermostat.

SPECIFICATIONS

UNIT SIZE			040–08	040–12	060–08	060–12	060–16	080–12
RATINGS AND PERFORMANCE								
Input Btuh*			40,000	40,000	60,000	60,000	60,000	80,000
Output Capacity BTUH* (ICS) (Shaded capacities are specified on rating plate)	Direct Vent (2–Pipe)	Upflow	37,000	37,000	56,000	56,000	56,000	74,000
		Downflow	37,000	37,000	56,000	56,000	56,000	74,000
		Horizontal	37,000	37,000	56,000	56,000	56,000	74,000
	Non–Direct Vent (1–Pipe)	Upflow	37,000	37,000	56,000	56,000	56,000	74,000
		Downflow	37,000	37,000	56,000	56,000	56,000	74,000
		Horizontal	37,000	37,000	56,000	56,000	56,000	74,000
AFUE% Nonweatherized ICS	Direct Vent (2–Pipe)	Upflow	92.3	92.3	92.3	92.3	92.3	92.3
		Downflow	91.2	91.2	91.2	91.2	91.2	91.2
		Horizontal	92.1	92.1	92.1	92.1	92.1	92.1
	Non–Direct Vent (1–Pipe)	Upflow	92.1					
		Downflow	91					
		Horizontal	91					
Certified Temperature Rise Range °F (°C)			30–60 (17–33)	15–45 (8–25)	45–75 (25–41)	30–60 (17–33)	20–50 (11–28)	40–70 (22–39)
Certified External Static Pressure		Heating	0.10	0.10	0.12	0.12	0.12	0.15
		Cooling	0.50	0.50	0.50	0.50	0.50	0.50
Airflow CFM‡		Heating	850	1125	885	1065	1320	1190
		Cooling	895	1215	900	1200	1545	1245
ELECTRICAL								
Unit Volts–Hertz–Phase			115–60–1					
Operating Voltage Range Min–Max**			104–127					
Maximum Unit Amps			6.1	7.4	6.1	7.2	9.6	7.7
Unit Ampacity††			8.4	10.0	8.4	9.8	12.8	10.4
Minimum Wire Size			14	14	14	14	14	14
Maximum Wire Length – Ft (M)‡‡			44 (13.4)	37 (11.2)	44 (13.4)	38 (11.5)	29 (8.8)	36 (10.9)
Maximum Fuse Size or Ckt Bkr Amps (Time–Delay Type Recommended)			15	15	15	15	15	15
Transformer (24v)			40va					
External Control Power Available		Heating	12va					
		Cooling	21va					
Air Conditioning Blower Relay			Standard					
CONTROLS								
Limit Control			SPST					
Heating Blower Control (Off Delay)			Factory–Set at 135 Sec					
Burners (Monoport)			2	2	3	3	3	4
Gas Connection Size			1/2–in. NPT					
GAS CONTROLS								
Gas Valve (Redundant)		Manufacturer	White–Rodgers					
		Min Inlet Pressure (in. wc)	4.5 (Natural Gas)					
		Max Inlet Pressure (in. wc)	13.6 (Natural Gas)					
Ignition Device			Hot Surface					
BLOWER DATA								
Direct–Drive Motor HP (Permanent Split Capacitor)			1/5	1/3	1/5	1/3	1/2	1/3
Motor Full Load Amps			4.9	5.8	4.9	5.8	7.9	5.8
RPM (Nominal)–Speeds			1075–3	1075–4	1075–3	1075–4		
Blower Wheel Diameter x Width – in. (mm)			10 x 6 (254 x 152)	10 x 7 (254 x 178)	10 x 6 (254 x 152)	10 x 7 (254 x 178)	11 x 8 (279 x 203)	10 x 7 (254 x 178)
Filter Size – In. (mm)–Sold Separately			(1) 16 x 25 x 3/4 (406 x 635 x 19)					
FACTORY–AUTHORIZED AND LISTED, DEALER–INSTALLED OPTIONS								
Gas Conversion Kit–Natural–to–Propane			KGANP4601ALL					
Gas Conversion Kit–Propane–to–Natural			KGAPN3901ALL					
Twinning Kit			N/A				KGATW 0601HSI	N/A
Manufactured (Mobile) Home Kit			KGAMH0301KIT					
Downflow Base***			KGASB0301ALL					
Vent Termination Kit (Bracket Only for 2 Pipes)			2–in.–KGAVT0101BRA			3–in.–KGAVT0201BRA		
Concentric Vent Termination Kit (Single Exit)			2–in.–KGAVT0701CVT			3–in.–KGAVT0801CVT		
Condensate Freeze Protection Kit			KGAHT0101CFP					
Condensate Neutralizer Kit (Obtained Thru RCD)			P908–0001					
Side Filter Rack (Without Filter)–Upflow ONLY			KGAFR0206ALL					
Electronic/Mechanical Air Cleaner			Model EACA, EZXCAB, or FILCAB					
Humidifier			Model HUM					
Heat/Energy Recovery Ventilator			Model HRV					
UV Lights			Model UVL					
Door Gasket Kit			KGBAC0110DGK					
Unframed Filter Permanent Washable 3/4–in. (19 mm) thick 16 x 25 (406 x 635 mm) 24 x 25 (610 x 635 mm)			KGAWF1306UFR KGAWF1506UFR					

58MCB

SPECIFICATIONS (CONTINUED)

UNIT SIZE				080–16	080–20	100–16	100–20	120–20	140–20
RATINGS AND PERFORMANCE									
Input Btuh*				80,000	80,000	100,000	100,000	120,000	138,000
Output Capacity BTUH* (ICS) (Shaded capacities are specified on rating plate)	Direct Vent (2–Pipe)		Upflow	74,000	74,000	93,000	93,000	112,000	127,000
			Downflow	74,000	74,000	93,000	93,000	112,000	127,000
			Horizontal	74,000	74,000	93,000	93,000	112,000	127,000
	Non–Direct Vent (1–Pipe)		Upflow	74,000	74,000	93,000	93,000	112,000	NA
			Downflow	74,000	74,000	93,000	93,000	112,000	NA
			Horizontal	74,000	74,000	93,000	93,000	112,000	NA
AFUE% Nonweatherized ICS	Direct Vent (2–Pipe)		Upflow	92.3	92.3	92.3	92.3	92.3	92.3
			Downflow	91.2	91.2	91.2	91.2	91.2	91.2
			Horizontal	92.1	92.1	92.1	92.1	92.1	92
	Non–Direct Vent (1–Pipe)		Upflow	92.1					NA
			Downflow	91					NA
			Horizontal	91					NA
Certified Temperature Rise Range °F (°C)				30–60 (17–33)	20–50 (11–28)	45–75 (25–41)	30–60 (17–33)	40–70 (22–39)	50–80 (28–44)
Certified External Static Pressure			Heating	0.15	0.15	0.20	0.20	0.20	0.20
			Cooling	0.50	0.50	0.50	0.50	0.50	0.50
Airflow CFM‡			Heating	1285	1785	1315	1690	1720	1970
			Cooling	1525	1925	1570	1930	2000	1990
ELECTRICAL									
Unit Volts–Hertz–Phase				115–60–1					
Operating Voltage Range Min–Max**				104–127					
Maximum Unit Amps				10.1	14.1	10.2	14.8	14.6	14.6
Unit Ampacity††				13.4	18.4	13.5	19.3	19.1	18.8
Minimum Wire Size				14	12	14	12	12	12
Maximum Wire Length – Ft (M)‡‡				28 (8.5)	31 (9.4)	27 (8.2)	30 (9.1)	30 (9.1)	30 (9.1)
Maximum Fuse Size or Ckt Bkr Amps (Time–Delay Type Recommended)				15	20	15	20	20	20
Transformer (24v)				40va					
External Control Power Available			Heating	12va					
			Cooling	21va					
Air Conditioning Blower Relay				Standard					
CONTROLS									
Limit Control				SPST					
Heating Blower Control (Off Delay)				Factory–Set at 135 Sec					
Burners (Monoport)				4	4	5	5	6	6
Gas Connection Size				1/2–in. NPT					
GAS CONTROLS									
Gas Valve (Redundant)			Manufacturer	White–Rodgers					
			Min Inlet Pressure (in. wc)	4.5 (Natural Gas)					
			Max Inlet Pressure (in. wc)	13.6 (Natural Gas)					
Ignition Device				Hot Surface					
BLOWER DATA									
Direct–Drive Motor HP (Permanent Split Capacitor)				1/2	3/4	1/2	3/4	3/4	3/4
Motor Full Load Amps				7.9	11.1	7.9	11.1	11.1	11.1
RPM (Nominal)–Speeds				1075–4					
Blower Wheel Diameter x Width – in. (mm)				11 x 8 (279x203)	11 x 10 (279x254)	11 x 8 (279x203)	11 x 10 (279x254)	11 x 10 (279x254)	11 x 10 (279x254)
Filter Size – in. (mm)–Sold Separately				(1) 20 x 25 x 3/4 (508 x 635 x 19)				(2)16 x 25 x 3/4 (406 x 635 x 19)	
FACTORY–AUTHORIZED AND LISTED, DEALER–INSTALLED OPTIONS									
Gas Conversion Kit–Natural–to–Propane				KGANP4601ALL					
Gas Conversion Kit–Propane–to–Natural				KGAPN3901ALL					
Twinning Kit				KGATW0601HSI					N/A
Manufactured (Mobile) Home Kit				KGAMH0301KIT					N/A
Downflow Base***				KGASB0301ALL					
Vent Termination Kit (Bracket Only for 2 Pipes)				2–in.–KGAVT0101BRA			3–in.–KGAVT0201BRA		
Concentric Vent Termination Kit (Single Exit)				2–in.–KGAVT0701CVT			3–in.–KGAVT0801CVT		
Condensate Freeze Protection Kit				KGAHT0101CFP					
Condensate Neutralizer Kit (Obtained Thru RCD)				P908–0001					
Side Filter Rack (Without Filter)–Upflow ONLY				KGAFR0206ALL					
Electronic/Mechanical Air Cleaner				Model EACB, EZXCAB, or FILCAB					
Humidifier				Model HUM					
Heat/Energy Recovery Ventilator				Model HRV					
UV Lights				Model UVL					
Door Gasket Kit				KGBAC0110DGK					
Unframed Filter Permanent Washable 3/4–in. (19 mm) thick 16 x 25 (406 x 635 mm) 24 x 25 (610 x 635 mm)				KGAWF1306UFR KGAWF1506UFR					

* Gas input ratings are certified for elevations to 2000 ft. (610 M) For elevations above 2000 ft. (610 M), reduce ratings 2% for each 1000 ft. (305 M) above sea level. In Canada, derate the unit 5% from 2000 to 4500 ft. (610 to 1372 M) above sea level.

† Capacity and AFUE in accordance with U.S. Government DOE test procedures.

‡ Airflow shown is for bottom only return–air supply with 3/4–in. (19 mm) filter(s). Air delivery above 1800 CFM may require that both sides, a combination of 1 side and bottom, or bottom only of the furnace be used for return air, see Air Delivery table. Where 2 sets of data are listed, the first set is for bottom only return–air supply. The second set is for both sides, or 1 side and bottom return–air supply. A filter is required for each return–air supply.

** Permissible voltage limits for proper furnace operation.

†† Unit ampacity = 125% of largest component's full load amps plus 100% of all other potential operating components (EAC, humidifier, etc.).

‡‡ Length shown is measured 1 way along wire path between unit and service panel for maximum 2% voltage drop.

*** Required for installation on combustible floors when no coil box is used, or when any coil box other than a Carrier CD5, CK5, CAP(R), CNP(R), or KCAKC cased coil is used.

N/A – Not applicable

ICS – Isolated Combustion System

58MCB

CONTROLS - THERMOSTATS AND ZONING

Non-Programmable Thermostat Section

TP–NAC, TC–NAC	For use with 1–speed Air Conditioner – deg. F/C, Auto Changeover
TP–NHP, TC–NHP	For use with 1 or 2–speed Heat Pumps – deg. F/C, Auto Changeover
TP–NRH†‡	For multi-use / stage configurations – deg. F/C, Auto Changeover/Temperature and Humidity Control

Programmable Thermostat Section

TC–PAC	For use with 1-speed Air Conditioner - deg. F/C, Auto Changeover, 7-Day Programmable
TC–PHP	For use with 1 or 2-speed Heat Pumps - deg. F/C, Auto Changeover, 5-2 Day Programmable
TP–PAC	For use with 1-speed Air Conditioner - deg. F/C, 7 Day Programmable
TP–PHP	For use with 1 or 2-speed Heat Pumps F/C, Auto Changeover, 7-Day Programmable
TP–PRH‡	For multi-use / stage configurations - deg. F/C, Auto Changeover, 7-Day Programmable/Temperature and Humidity Control

58MCB

Zoning Control Selection

ZONECC3ZAC01 ZONECC3ZHP01	Zone Perfect Two–Zone kit
ZONECC2KIT01–B	Zone Perfect Plus 2–Zone kit/Temperature and Humidity Control
ZONECC4KIT01–B	Zone Perfect Plus 4–Zone kit/Temperature and Humidity Control
ZONECC8KIT01–B	Zone Perfect Plus 8–Zone kit/Temperature and Humidity Control

†Thermidistat™ Control control can be configured for multiple use and staging. It must be configured for each specific application.
‡HYBRID HEAT™ thermostat is used with furnace and heat pump application.

MEETS DOE RESIDENTIAL CONSERVATION SERVICES PROGRAM STANDARDS

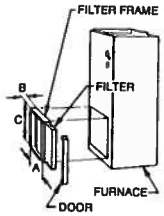
Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

As an ENERGY STAR® Partner, Carrier Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

ISO 9001:2000

REGISTERED QUALITY SYSTEM

These products are engineered and manufactured under an ISO 9001 registered quality system.



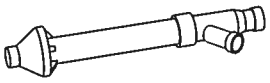
A93068

SIDE FILTER RACK

Custom-made filter rack for easy connection when a return plenum already exists. Provides easy access for cleaning filter.

Accepts one 16 x 25 x 1 in. filter. (Not included)

A	23-1/8 in.
B	2-3/8 in.
C	14-1/2 in.

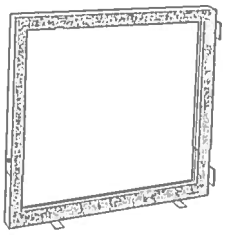


A93086

CONCENTRIC VENT (Direct Vent/2-Pipe Application)

A concentric vent kit allows vent and combustion-air pipes to terminate through a single exit in a roof or side wall.

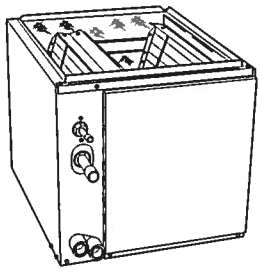
One pipe runs inside the other allowing venting through the inner pipe and combustion air to be drawn in through the outer pipe.



A88202

DOWNFLOW SUBBASE

One base fits all furnace sizes. The base is designed to be installed between the furnace and a combustible floor when no coil box is used or when a coil box other than a Carrier cased coil is used. It is CSA (A.G.A./C.G.A.) design certified for use with Carrier 58MCB furnaces when installed in downflow

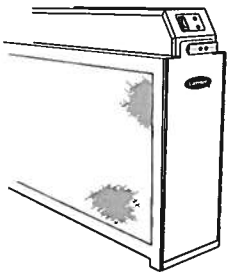


A96214

CARRIER CASED N-COIL (as shown)

The Carrier Cased N-Coil or A-Coil is an upflow/downflow furnace coil which can also replace the downflow subbase when installing the 58MCB on combustible flooring in the downflow orientation.

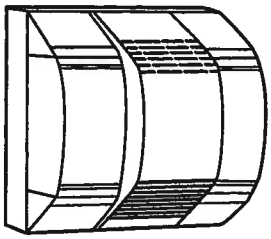
58MCB



A97152

ELECTRONIC AIR CLEANER

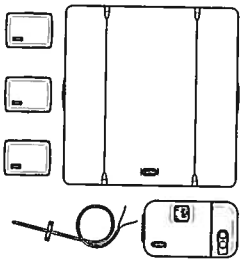
Cleans the air of smoke, dirt, and many pollens commonly found. Saves decorating and cleaning expenses by keeping carpets, furniture, and drapes cleaner.



A01484

HUMIDIFIER

By adding moisture to winter-dry air, a Carrier humidifier can often improve comfort and keeps woodwork, wallpaper, and paint in better condition. Moisturizing household air also helps to retain normal body heat and provides comfort at lower temperatures.

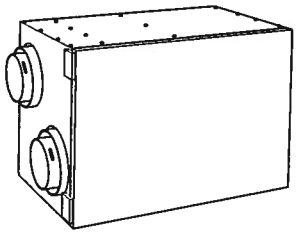


A97432

CONTROLS: THERMOSTATS AND ZONING

Available in programmable and non-programmable models, Carrier thermostats maintain a constant, comfortable temperature level in the home.

For the ultimate in home comfort, Carrier's 2, 4, and 8-zone systems allow temperature control of individual zones of the home. This is accomplished through a series of electronic dampers and remote room sensors. The 4-zone system is shown.



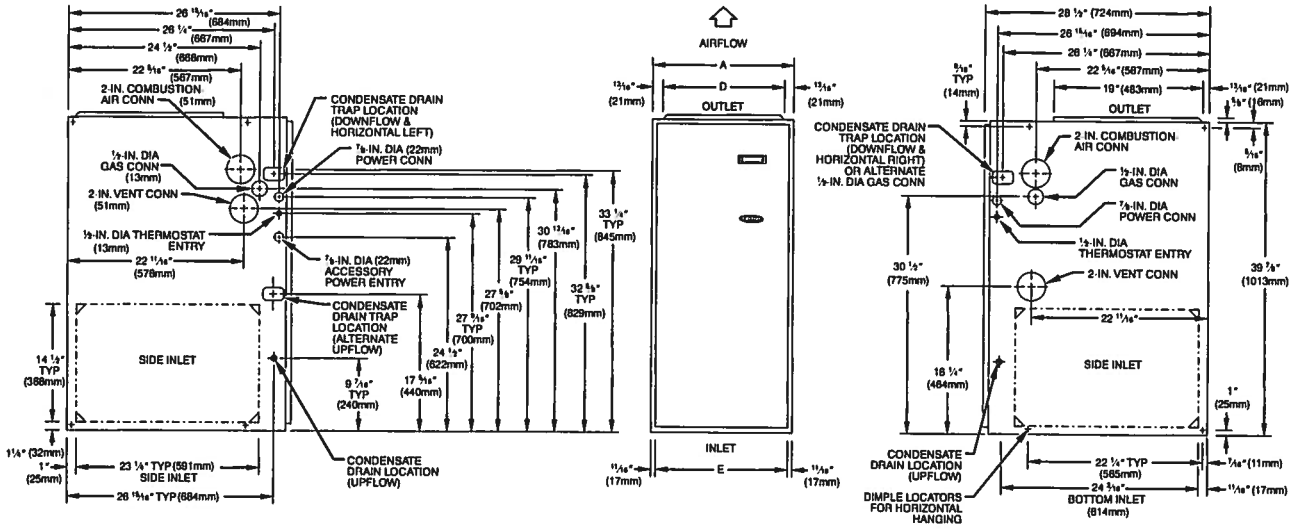
A94336

ENERGY/HEAT RECOVERY VENTILATOR

Carrier's energy or heat recovery ventilators exhaust stale indoor air and provide fresh outdoor air to the home while minimizing heat loss and humidity level. Especially useful for today's tighter constructed houses.

Energy recovery ventilator is shown.

A08152



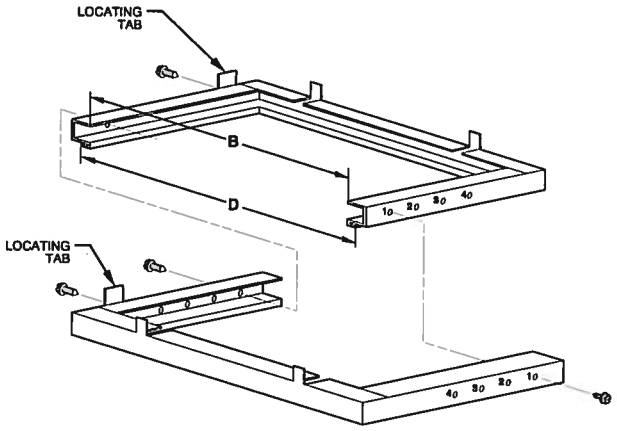
NOTES: 1. Minimum return-air openings at furnace, based on metal duct. If flex duct is used, see flex duct manufacturer's recommendation for equivalent diameters.
2. Minimum return-air opening at furnace:
   a. For 800 CFM 16-in . (408mm) round or 14 ½ (368mm) x 12-in. (305mm) rectangle.
   b. For 1200 CFM 20-in . (508mm) round or 14 ½ (368mm) x 19 ½ in. (495mm) rectangle.
   c. For 1600 CFM 22-in .(559mm) round or 14 ½ (368mm) x 23 ½ in.(591mm) rectangle.
   d. For airflow requirements above 1800 CFM, see Air Delivery table in Product Data literature for specific use of single side inlets. The use of both side inlets, a combination of 1 side and the bottom, or the bottom only will ensure adequate return air openings for airflow requirements above 1800 CFM at 0.5" W.C. ESP.

A05105

Dimensions – IN. (mm)

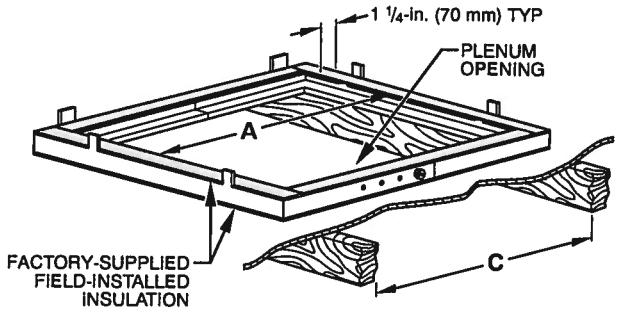
UNIT SIZE	A	D	E
040–08	17-1/2 (445)	15-7/8 (403)	16 (406)
040–12	17-1/2 (445)	15-7/8 (403)	16 (406)
060–08	17-1/2 (445)	15-7/8 (403)	16 (406)
060–12	17-1/2 (445)	15-7/8 (403)	16 (406)
060–16	17-1/2 (445)	15-7/8 (403)	16 (406)
080–12	17-1/2 (445)	15-7/8 (403)	16 (406)
080–16	17-1/2 (445)	15-7/8 (403)	16 (406)
080–20	21 (533)	19-3/8 (492)	19-1/2 (495)
100–16	21 (533)	19-3/8 (492)	19-1/2 (495)
100–20	21 (533)	19-3/8 (492)	19-1/2 (495)
120–20	24-1/2 (622)	19-3/8 (492)	23 (584)
140–20	24-1/2 (622)	22-7/8 (581)	23 (584)

ACCESSORY DOWNFLOW SUBBASE



A88207

Disassembled



A97427

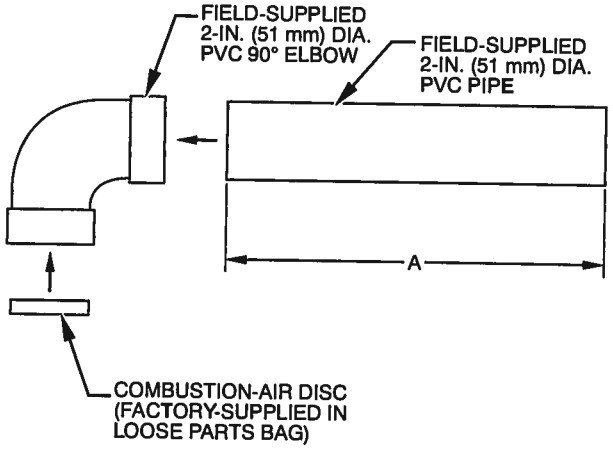
Assembled

58MCB

FURNACE CASING WIDTH IN. (mm)	FURNACE IN DOWNFLOW APPLICATION	PLENUM OPENING* IN. (mm)		FLOOR OPENING IN. (mm)		HOLE NO. FOR WIDTH ADJUSTMENT
		A	B	C	D	
17–1/2 (445 mm)	Furnace with or without Cased Coil Assembly or Coil Box	15–1/8 (384 mm)	19 (483 mm)	16–3/4 (426 mm)	20–3/8 (518 mm)	3
21 (533 mm)	Furnace with or without Cased Coil Assembly or Coil Box	18–5/8 (473 mm)	19 (483 mm)	20–1/4 (514 mm)	20–3/8 (518 mm)	2
24–1/2 (622 mm)	Furnace with or without Cased Coil Assembly or Coil Box	22–1/8 (562 mm)	19 (483 mm)	23–3/4 (603 mm)	20–3/8 (518 mm)	1

*The plenum should be constructed 1/4 in. (6 mm) smaller in width and depth than the plenum dimensions shown above.

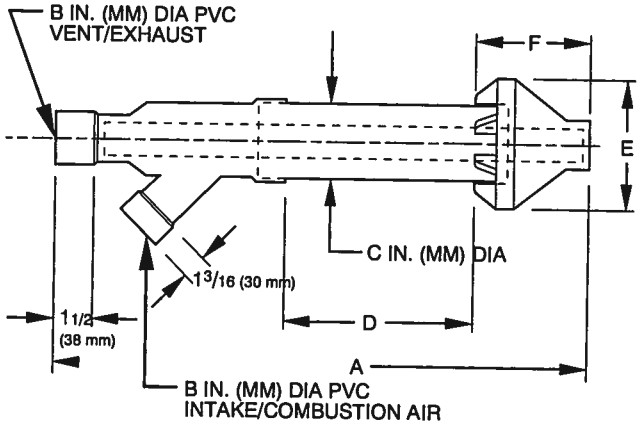
COMBUSTION-AIR PIPE FOR NON-DIRECT VENT (1-PIPE) APPLICATION (SIZES 040 THOUGH 120 ONLY)



A96211

CASING WIDTH IN. (mm)	A IN. (mm)
17-1/2 (445)	8-1/2 ± 1/2 (216 ± 13)
21 (533)	10-1/2 ± 1/2 (267 ± 13)
24-1/2 (622)	12 ± 1/2 (305 ± 13)

CONCENTRIC VENT FOR DIRECT VENT (2-PIPE) APPLICATION (ALL MODEL SIZES)



A97110

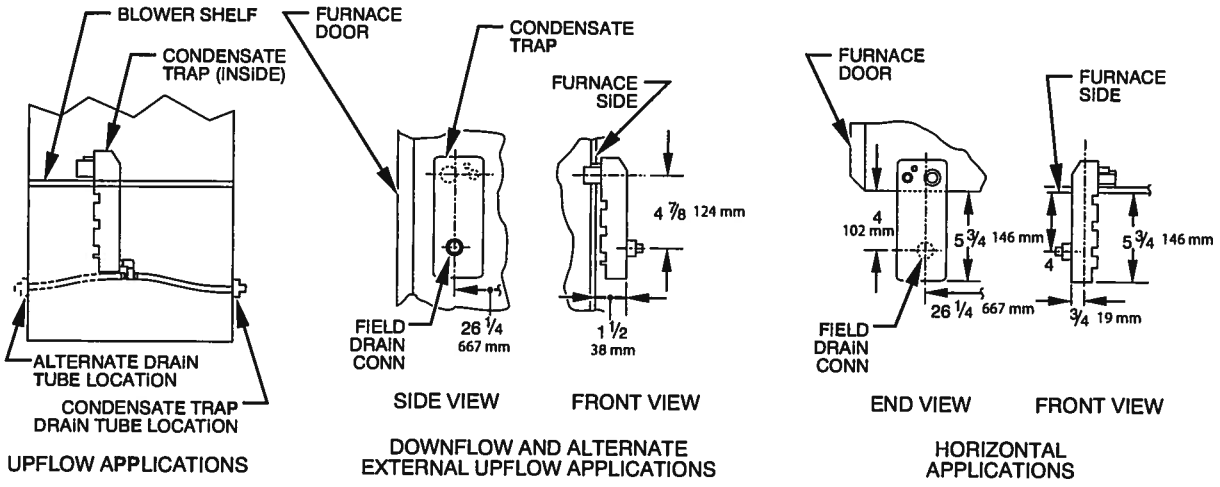
PART NO.	A*	B	C	D†	E	F
KGAVT0701CVT	33-3/8 (848)	2 (51)	3-1/2 (89)	16-5/8 (422)	6-1/4 (159)	5-3/4 (146)
KGAVT0801CVT	38-7/8 (987)	3 (76)	4-1/2 (114)	21-1/8 (537)	7-3/8 (187)	6-1/2 (165)

* Dimension A will change accordingly as dimension D is lengthened or shortened.

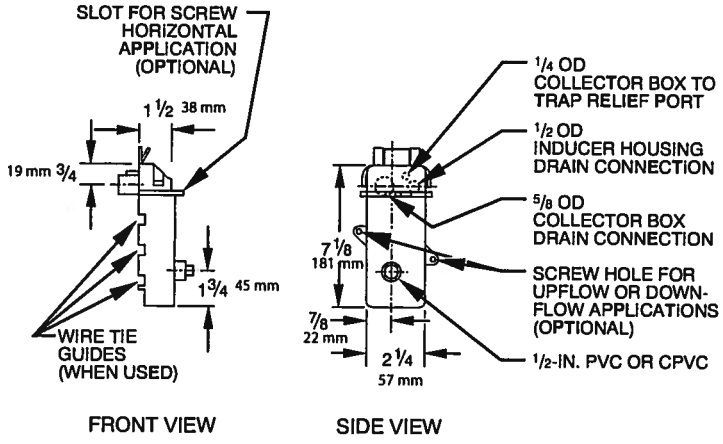
† Dimension D may be lengthened to 60 in. (1524 mm) maximum. Dimension D may also be shortened by cutting the pipes provided in the kit to 12 in. (305 mm) minimum.

NOTE: See furnace installation instructions when venting multiple furnaces near each other.

CONDENSATE TRAP

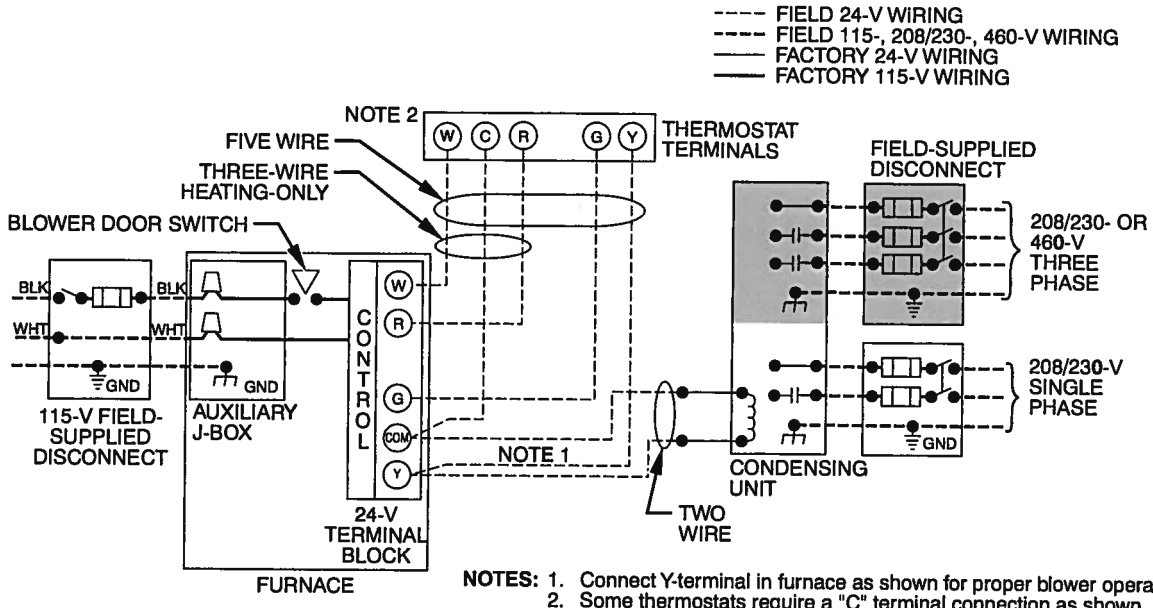


58MCB



A93026

TYPICAL WIRING SCHEMATIC



NOTES: 1. Connect Y-terminal in furnace as shown for proper blower operation.
2. Some thermostats require a "C" terminal connection as shown.
3. If any of the original wire, as supplied, must be replaced, use same type or equivalent wire.

A02174

CLEARANCE TO COMBUSTIBLES

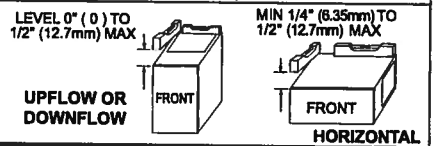
58MCB

INSTALLATION

- This forced air furnace is equipped for use with natural gas at altitudes 0 - 10,000 ft (0 - 3,050m), except 140 size furnaces are only approved for altitudes 0 - 7,000 ft. (0 - 2,135m).
- An accessory kit, supplied by the manufacturer, shall be used to convert to propane gas use or may be required for some natural gas applications.
- This furnace is for indoor installation in a building constructed on site. This furnace may be installed in a manufactured (mobile) home when stated on rating plate and using factory authorized kit..
- This furnace may be installed on combustible flooring in alcove or closet at **Minimum Inches Clearance To Combustible Construction** as described below.
- This furnace requires a special venting system. Refer to the installation instructions for parts list and method of installation. In the US this furnace is for use with schedule-40 PVC, PVC-DWV, CPVC, or ABS-DWV pipe, and must not be vented in common with other gas-fired appliances. In Canada, refer to installation instructions for vent materials. Construction through which vent/air intake pipes may be installed is maximum 24 inches (610 mm), minimum 3/4 inches (19 mm) thickness (including roofing materials).
- Cette fournaise à air pulsé est équipée pour utilisation avec gaz naturel et altitudes comprises entre 0 - 3,050m (0 - 10,000 pi),excepté queles fournaises de 140 taille sont pour altitudes comprises entre 0 - 2,135m (0 - 7,000pi).
- Utiliser une trousse de conversion, fournie par le fabricant, pour passer au gaz propane ou pour certaines installations au gaz naturel.
- Cette fournaise à air pulsé est pour installation à l'intérieur dans un bâtiment construit sur place. Cette fournaise à air pulse peut être installée dans une maison préfabriquée (maison mobile) si prescrit par la plaque signalétique et sil on utilise une trousse specifiée par le fabricant.
- Cette fournaise peut être installée sur un plancher combustible dans un enfoncement ou un placard en observant les **Dégagement Minimum En Pouces Avec Éléments De Construction Combustibles.**
- Cette fournaise nécessite un système d'évacuation spécial. La méthode d'installation et la liste des pièces nécessaires figurent dans les instructions d'installation. Aux Etats-Unis, cette fournaise doit s'utiliser avec la tuyauterie des nomenclatures 40 PVC, PVC-DWV, CPVC, ou ABS-DWV et elle ne peut pas être ventilée conjointment avec d'autres appareils à gaz. Au Canada, referer aux instructions d'installation pour lex matériaux à ventiler. Épaisseur de la construction au travers de laquelle il est possible de faire passer les tuyaux d'aération (admission/évacuation): 24 po (610 mm) maximum, 3/4 po (19mm) minimum (y compris la toiture).

For upflow and downflow applications, furnace must be installed level, or pitched within 1/2" (12.7mm) of level. For a horizontal application, the furnace must be pitched minimum 1/4" (6.35mm) to maximum of 1/2" (12.7mm) forward for proper drainage. See Installation Manual for IMPORTANT unit support details on horizontal applications.

Pour des applications de flux ascendant et descendant, la fournaise doit être installée de niveau ou inclinée à pas plus de 1/2" (12.7mm) du niveau. Pour une application horizontale, la fournaise doit être inclinée entre minimum 1/4" (6.35mm) et maximum 1/2" (12.7mm) du niveau pour le drainage approprié. En cas d'installation en position horizontale, consulter les renseignements IMPORTANTS sur le support dans le manuel d'installation.



MINIMUM INCHES CLEARANCE TO COMBUSTIBLE CONSTRUCTION

ALL POSITIONS:

* Minimum front clearance for service 24 inches (610mm).

†† 140 size furnaces require 1 inch back clearance to combustible materials.

DOWNFLOW POSITIONS:

† For installation on combustible floors only when installed on special base No. KGASB0201ALL or NAHA01101SB, Coil Assembly, Part No. CAR, CAP, CNPV, CNRV or Coil Casing, Part No. KCAKC, or WENC or WTNC.

HORIZONTAL POSITIONS:

Line contact is permissible only between lines formed by intersections of top and two sides of furnace jacket, and building joists, studs, or framing.

§ Clearance shown is for air inlet and air outlet ends.

Ø 120 and 140 size furnaces require 1 inch bottom clearance to combustible materials.

DÉGAGEMENT MINIMUM EN POUCES AVEC ÉLÉMENTS DE CONSTRUCTION COMBUSTIBLES

POUR TOUS LES POSITIONS:

* Dégagement avant minimum de 24 po (610mm) pour l'entretien.

†† Pour les fournaises de 140 taille, 1 po (25mm) dégagement des matériaux combustibles est requis au-arriere.

POUR LA POSITION COURANT DESCENDANT:

† Pour l'installation sur le plancher combustible seulement quand on utilise la base spéciale, pièce nº KGASB0201ALL ou NAHA01101SB, l'ensemble serpentin, pièce nº CAR, CAP, CNPV, CNRV, ou le carter de serpentin, pièce nº KCAKC ou WENC ou WTNC.

POUR LA POSITION HORIZONTALE:

Le contact n'est permis qúentre les lignes formées par les intersections du dessus et des deuxcôtés de la chemise de la fournaise, et des solives, des montants ou de la charpente du bâtiment.

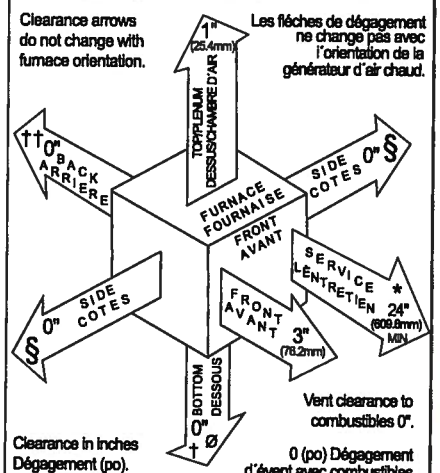
§ La distance indiquée concerne l'extrémité du tuyau d'arrivée d'air et l'extrémité du tuyau de sortie d'air.

Ø Pour les fournaises de 120 et 140 taille, 1 po (25mm) dégagement des matériaux combustibles est requis au-dessous.

335122-201 REV. B LIT TOP

This furnace is approved for UPFLOW, DOWNFLOW and HORIZONTAL installations.

Cette fournaise est approuvée pour l'installation HORIZONTALE et la circulation d'air VERS LE HAUT et VERS LE BAS.



A08435

AIR DELIVERY-CFM (WITH FILTER)*

UNIT SIZE	RETURN-AIR SUPPLY	SPEED	EXTERNAL STATIC PRESSURE (in. wc)							
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
040-08	1 side or bottom	High Med-Low Low	1075 850 740	1040 825 700	995 780 650	945 740 620	895 685 565	840 635 515	760 560 455	670 480 385
040-12	1 side or bottom	High Med-High Med-Low Low	1470 1315 1125 930	1415 1280 1110 925	1400 1235 1085 910	1285 1180 1045 850	1215 1115 990 830	1120 1035 915 770	995 930 830 705	890 825 740 635
060-08	1 side or bottom	High Med-Low Low	1100 890 745	1065 865 710	1005 810 670	945 765 625	900 705 565	805 620 505	730 540 425	610 475 360
060-12	1 side or bottom	High Med-High Med-Low Low	1430 1270 1070 915	1375 1260 1055 895	1325 1215 1045 885	1275 1160 1015 865	1200 1105 975 840	1135 1035 920 800	1040 950 850 720	935 850 750 650
060-16	1 side or bottom	High Med-High Med-Low Low	1700 1500 1325 1205	1695 1465 1295 1170	1640 1435 1265 1145	1580 1385 1230 1110	1545 1355 1190 1080	1450 1300 1150 1035	1380 1250 1105 990	1310 1185 1050 950
080-12	1 side or bottom	High Med-High Med-Low Low	1535 1395 1200 1040	1470 1350 1175 1020	1405 1300 1125 990	1330 1225 1065 960	1245 1155 1030 910	1160 1080 970 860	1065 985 890 785	935 880 780 680
080-16	1 side or bottom	High Med-High Med-Low Low	1750 1495 1310 1135	1685 1455 1260 1105	1635 1405 1225 1075	1575 1355 1170 1040	1525 1305 1125 995	1445 1250 1095 995	1380 1185 1040 910	1310 1120 980 880
080-20	1 side or bottom	High Med-High Med-Low Low	2200 2100 1815 1560	2175 2025 1760 1555	2085 1945 1720 1515	2025 1865 1670 1460	1925 1785 1620 1435	1820 1700 1550 1390	1735 1620 1480 1340	1635 1540 1405 1270
	both sides or 1 side and bottom	High Med-High	2360 1965	2280 1925	2210 1870	2130 1830	2035 1760	1960 1710	1875 1670	1790 1575
100-16	1 side or bottom	High Med-High Med-Low Low	1740 1500 1340 1195	1705 1470 1315 1175	1660 1445 1300 1165	1615 1410 1270 1130	1570 1375 1235 1100	1500 1330 1200 1070	1425 1280 1140 1030	1355 1210 1095 975
100-20	1 side or bottom	High Med-High Med-Low Low	2250 2020 1725 1490	2175 1950 1690 1480	2090 1900 1660 1460	2020 1840 1630 1440	1930 1790 1575 1380	1855 1710 1520 1340	1760 1640 1460 1295	1670 1545 1370 1230
	both sides or 1 side and bottom	High Med-High	2360 1960	2315 1940	2265 1930	2200 1900	2130 1850	2055 1800	1965 1740	1890 1660
120-20	bottom only	High Med-High Med-Low Low	2350 2100 1770 1545	2250 2015 1720 1520	2160 1955 1675 1465	2070 1875 1620 1415	2000 1810 1575 1365	1885 1710 1515 1325	1790 1650 1450 1265	1635 1540 1365 1185
	both sides or 1 side and bottom	High Med-High	2435 2040	2360 2000	2285 1950	2220 1905	2130 1835	2050 1790	1965 1725	1875 1650
	1 side only	High Med-High	2255 1985	2190 1930	2115 1890	2045 1840	1965 1780	1890 1720	1800 1645	1710 1560
140-20	bottom only	High Med-High Med-Low Low	2285 2020 1675 1460	2210 1970 1650 1445	2140 1920 1620 1430	2065 1870 1590 1400	1990 1805 1560 1370	1910 1730 1510 1320	1830 1660 1450 1275	1745 1590 1390 1230
	both sides or 1 side and bottom	High Med-High	2310 1975	2255 1945	2185 1900	2120 1860	2045 1835	1965 1775	1880 1720	1800 1640
	1 side only	High Med-High	2140 1930	2080 1850	2025 1800	1945 1740	1875 1725	1795 1660	1725 1580	1625 1495

* A filter is required for each return–air supply.
*For horizontal and downflow applications, use "1 side or bottom" or "bottom only" as airflow reference.

MAXIMUM ALLOWABLE PIPE LENGTH - FT (M)

ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA IN. (mm)*	PIPE DIA IN. (mm)*	1	2	3	4	5	6
0 to 2000 (0 to 610)	40,000	2 Pipe or 2-in. (51 mm) Concentric	1 (25)	1 (25)	5 (1.5)	NA	NA	NA	NA	NA
			1-1/2 (38)	1-1/2 (38)	70 (21.3)	70 (21.3)	65 (19.8)	60 (18.3)	60 (18.3)	55 (16.8)
			2 (51)	2 (51)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	20 (6.1)	15 (4.6)	10 (3.0)	5 (1.5)	NA	NA
			2 (51)	2 (51)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	10 (3.0)	NA	NA	NA	NA	NA
			2 (51)	2 (51)	55 (16.8)	50 (15.2)	35 (10.7)	30 (9.1)	30 (9.1)	20 (6.1)
			2-1/2 (64)	2-1/2 (64)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2 (51)	2 (51)	5 (1.5)	NA	NA	NA	NA	NA
			2-1/2 (64)	2-1/2 (64)	40 (12.2)	30 (9.1)	20 (6.1)	20 (6.1)	10 (3.0)	NA
			3 (76)	3 (76)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64) one disk	2-1/2 (64)	10 (3.0)	NA	NA	NA	NA	NA
			3 (76)†	NA	45 (13.7)	40 (12.2)	35 (10.7)	30 (9.1)	25 (7.6)	20 (6.1)
			3 (76) † no disk	3 (76)†	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	140,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64) one disk	NA	5 (1.5)	NA	NA	NA	NA	NA
			3 (76)†	NA	40 (12.1)	35 (10.6)	30 (9.1)	25 (7.6)	20 (6.1)	15 (4.6)
			3 (76) † no disk	NA	60 (18.3)	56 (17.0)	52 (15.8)	48 (14.6)	44 (13.4)	40 (12.2)
			4 (102) † no disk	NA	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA IN. (mm)*	PIPE DIA IN. (mm)*	1	2	3	4	5	6
2001 to 3000 (610 to 914) Canada	40,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	67 (20.4)	62 (18.9)	57 (17.4)	52 (15.8)	52 (15.8)	47 (14.3)
			2 (51)	2 (51)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	17 (5.2)	12 (3.7)	7 (2.1)	NA	NA	NA
			2 (51)	2 (51)	70 (21.3)	67 (20.4)	66 (20.1)	61 (18.6)	61 (18.6)	61 (18.6)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	49 (14.9)	44 (13.4)	30 (9.1)	25 (7.6)	25 (7.6)	15 (4.6)
			2-1/2 (64)	2-1/2 (64)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64)	2-1/2 (64)	35 (10.7)	26 (7.9)	16 (4.9)	16 (4.9)	6 (1.8)	NA
			3 (76)	3 (76)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	66 (20.1)	61 (18.6)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)	NA	14 (4.3)	9 (2.7)	NA	NA	NA	NA
			NA	3 (76)†	63 (19.2)	62 (18.9)	62 (18.9)	61 (18.6)	61 (18.6)	61 (18.6)
			3 (76)† no disk	NA	70 (21.3)	70 (21.3)	63 (19.2)	56 (17.1)	50 (15.2)	43 (13.1)
			4 (102)† no disk	4 (102)† no disk	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	140,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76) one disk†	NA	20 (6.1)	15 (4.6)	10 (3.0)	5 (1.5)	NA	NA
			3 (76)† no disk	NA	39 (11.8)	35 (10.6)	31 (11.9)	27 (8.2)	23 (7.0)	19 (5.8)
			4 (102)† no disk	NA	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)

See notes at end of table.

MAXIMUM ALLOWABLE PIPE LENGTH - FT (M) (CONTINUED)

ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA – IN (mm)*	PIPE DIA – IN (mm)*	1	2	3	4	5	6
3001 to 4000 (914 to 1219)	40,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	64 (19.5)	59 (18.0)	54 (16.5)	49 (14.9)	48 (14.6)	43 (13.1)
			2 (51)	2 (51)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	16 (4.9)	11 (3.4)	6 (1.8)	NA	NA	NA
			2 (51)	2 (51)	68 (20.7)	63 (19.2)	62 (18.9)	57 (17.4)	57 (17.4)	56 (17.1)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	46 (14.0)	41 (12.5)	28 (8.5)	23 (7.0)	22 (6.7)	13 (4.0)
			2-1/2 (64)	2-1/2 (64)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64)	2-1/2 (64)	33 (10.1)	24 (7.3)	15 (4.6)	14 (4.3)	5 (1.5)	NA
			3 (76)	3 (76)	70 (21.3)	70 (21.3)	70 (21.3)	66 (20.1)	61 (18.6)	56 (17.1)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)† no disk	NA	65 (19.8)	58 (17.7)	51 (15.5)	44 (13.4)	38 (11.6)	31 (9.4)
			NA	3 (76)†	59 (18.0)	59 (18.0)	58 (17.7)	57 (17.4)	57 (17.4)	56 (17.1)
		4† no disk	4 (102)† no disk	4 (102) † no disk	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	140,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76) one disk†	NA	11 (3.4)	6 (1.8)	NA	NA	NA	NA
			3 (76)† no disk	NA	30 (9.1)	26 (7.9)	22 (6.7)	18 (5.5)	14 (4.3)	10 (3.0)
			4 (102)† no disk	NA	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)

ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA IN. (mm)*	PIPE DIA IN. (mm)*	1	2	3	4	5	6
4001 to 5000‡ (1219 to 1524)	40,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	60 (18.3)	55 (16.8)	50 (15.2)	45 (13.7)	44 (13.4)	39 (11.9)
			2 (51)	2 (51)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	15 (4.6)	10 (3.0)	5 (1.5)	NA	NA	NA
			2 (51)	2 (51)	64 (19.5)	59 (18.0)	58 (17.7)	53 (16.2)	52 (15.8)	52 (15.8)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	44 (13.4)	39 (11.9)	26 (7.9)	21 (6.4)	20 (6.1)	11 (3.4)
			2-1/2 (64)	2-1/2 (64)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64)	2-1/2 (64)	31 (9.4)	22 (6.7)	13 (4.0)	12 (3.7)	NA	NA
			3 (76)	3 (76)	70 (21.3)	70 (21.3)	67 (20.4)	62 (18.9)	57 (17.4)	52 (15.8)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)† no disk	NA	53 (16.2)	46 (14.0)	40 (12.2)	33 (10.1)	26 (7.9)	20 (6.1)
			NA	3 (76)†	56 (17.1)	55 (16.8)	54 (16.5)	53 (16.2)	52 (15.8)	52 (15.8)
			4 (102)† no disk	4 (102)† no disk	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	140,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)† no disk	NA	21 (6.4)	17 (5.1)	13 (3.9)	9 (2.7)	5 (1.5)	NA
			4 (102)† no disk	NA	69 (21.0)	64 (19.5)	59 (17.9)	54 (16.4)	49 (15.0)	44 (13.4)

See notes at end of table.

MAXIMUM ALLOWABLE PIPE LENGTH - FT (M) (CONTINUED)

ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA IN. (mm)*	PIPE DIA IN. (mm)*	1	2	3	4	5	6
5001 to 6000‡ (1524 to 1829)	40,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	57 (17.4)	52 (15.8)	47 (14.3)	42 (12.8)	40 (12.2)	35 (10.7)
			2 (51)	2 (51)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	14 (4.3)	9 (2.7)	NA	NA	NA	NA
			2 (51)	2 (51)	60 (18.3)	55 (16.8)	54 (16.5)	49 (14.9)	48 (14.6)	47 (14.3)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	41 (12.5)	36 (11.0)	23 (7.0)	18 (5.5)	17 (5.2)	8 (2.4)
			2-1/2 (64)	2-1/2 (64)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64)	2-1/2 (64)	29 (8.8)	21 (6.4)	12 (3.7)	11 (3.4)	NA	NA
			3 (76)	3 (76)	70 (21.3)	67 (20.4)	62 (18.9)	57 (17.4)	52 (15.8)	47 (14.3)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)† no disk	NA	42 (12.8)	35 (10.7)	29 (8.8)	22 (6.7)	15 (4.6)	9 (2.7)
			NA	3 (76)†	53 (16.2)	52 (15.8)	50 (15.2)	49 (14.9)	48 (14.6)	47 (14.3)
			4 (102)† no disk	4 (102)† no disk	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)	70 (21.3)
	140,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)† no disk	NA	12 (3.6)	8 (2.4)	NA	NA	NA	NA
			4 (102)† no disk	NA	42 (12.8)	37 (11.2)	32 (9.7)	27 (8.2)	22 (6.7)	17 (5.1)
ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA IN. (mm)*	PIPE DIA IN. (mm)*	1	2	3	4	5	6
6001 to 7000‡ (1829 to 2134)	40,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	53 (16.2)	48 (14.6)	43 (13.1	38 (11.6)	37 (11.3)	32 (9.8)
			2 (51)	2 (51)	70 (21.3)	70 (21.3)	68 (20.7)	67 (20.4)	66 (20.1)	64 (19.5)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	13 (4.0)	8 (2.4)	NA	NA	NA	NA
			2 (51)	2 (51)	57 (17.4)	52 (15.8)	50 (15.2)	45 (13.7)	44 (13.4)	43 (13.1)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	38 (11.6)	33 (10.1)	21 (6.4)	16 (4.9)	15 (4.6)	6 (1.8)
			2-1/2 (64)	2-1/2 (64)	70 (21.3)	70 (21.3)	68 (20.7)	67 (20.4)	66 (20.1)	64 (19.5)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64)	2-1/2 (64)	27 (8.2)	19 (5.8)	10 (3.0)	9 (2.7)	NA	NA
			3 (76)	3 (76)	68 (20.7)	63 (19.2)	58 (17.7)	53 (16.2)	48 (14.6)	43 (13.1)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)† no disk	NA	31 (9.4)	24 (7.3)	18 (5.5)	11 (3.4)	NA	NA
			NA	3 (76)†	49 (14.9)	48 (14.6)	47 (14.3)	45 (13.7)	44 (13.4)	43 (13.1)
	140,000	2 Pipe or 3-in. (76 mm) Concentric	4 (102)† no disk	NA	17 (5.1)	12 (3.6)	7 (2.1)	NA	NA	NA

See notes at end of table.

MAXIMUM ALLOWABLE PIPE LENGTH - FT (M) (CONTINUED)

ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA IN. (mm)*	PIPE DIA IN. (mm)*	1	2	3	4	5	6
7001 to 8000‡ (2134 to 2438)	40,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	49 (14.9)	44 (13.4)	39 (11.9)	34 (10.4)	33 (10.1)	28 (6.5)
			2 (51)	2 (51)	66 (20.1)	65 (19.8)	63 (19.2)	62 (18.9)	60 (18.3)	59 (18.0)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	12 (3.7)	7 (2.1)	NA	NA	NA	NA
			2 (51)	2 (51)	53 (16.2)	48 (14.6)	46 (14.0)	41 (12.5)	40 (12.2)	38 (11.6)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	36 (11.0)	31 (9.4)	19 (5.8)	14 (4.3)	12 (3.7)	NA
			2-1/2 (64)	2-1/2 (64)	66 (20.1)	65 (19.8)	63 (19.2)	62 (18.9)	60 (18.3)	59 (18.0)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64)	2-1/2 (64)	25 (7.6)	17 (5.2)	8 (2.4)	7 (2.1)	NA	NA
			3 (76)	3 (76)	63 (19.2)	58 (17.7)	53 (16.2)	48 (14.6)	43 (13.1)	38 (11.6)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)† no disk	NA	20 (6.1)	13 (4.0)	7 (2.1)	NA	NA	NA
			NA	3 (76)†	46 (14.0)	44 (13.4)	43 (13.1)	41 (12.5)	40 (12.2)	38 (11.6)
			4 (102)† no disk	4 (102)† no disk	61 (18.6)	56 (17.1)	51 (15.5)	46 (14.0)	41 (12.5)	36 (11.0)
	140,000	NA								

ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA IN. (mm)*	PIPE DIA IN. (mm)*	1	2	3	4	5	6
8001 to 9000‡ (2438 to 2743)	40,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	46 (14.0)	41 (12.5)	36 (11.0)	31 (9.4)	29 (8.8)	24 (7.3)
			2 (51)	2 (51)	62 (18.9)	60 (18.3)	58 (17.7)	56 (17.1)	55 (16.8)	53 (16.2)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	11 (3.4)	6 (1.8)	NA	NA	NA	NA
			2 (51)	2 (51)	49 (14.9)	44 (13.4)	42 (12.8)	37 (11.3)	35 (10.7)	34 (10.4)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	33 (10.1)	28 (8.5)	17 (5.2)	12 (3.7)	10 (3.0)	NA
			2-1/2 (64)	2-1/2 (64)	62 (18.9)	60 (18.3)	58 (17.7)	56 (17.1)	55 (16.8)	53 (16.2)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64)	2-1/2 (64)	23 (7.0)	15 (4.6)	7 (2.1)	5 (1.5)	NA	NA
			3 (76)	3 (76)	59 (18.0)	54 (16.5)	49 (14.9)	44 (13.4)	39 (11.9)	34 (10.4)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	3 (76)† no disk	NA	10 (3.0)	NA	NA	NA	NA	NA
			NA	3 (76)†	43 (13.1)	41 (12.5)	39 (11.9)	37 (11.3)	35 (10.7)	34 (10.4)
			4 (102)† no disk	4† no disk	35 (10.7)	30 (9.1)	25 (7.6)	20 (6.1)	15 (4.6)	10 (3.0)
	140,000	NA								

See notes at end of table.

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MAXIMUM ALLOWABLE PIPE LENGTH - FT (M) (CONTINUED)

ALTITUDE FT (M)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA IN. (mm)*	PIPE DIA IN. (mm)*	1	2	3	4	5	6
9001 to 10,000‡ (2743 to 3048)	40,000	2 Pipe or 2-in. (51 mm) Concentric	1-1/2 (38)	1-1/2 (38)	42 (12.8)	37 (11.3)	32 (9.8)	27 (8.2)	25 (7.6)	20 (6.1)
			2 (51)	2 (51)	57 (17.4)	55 (16.8)	53 (16.2)	51 (15.5)	49 (14.9)	47 (14.3)
	60,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	45 (13.7)	40 (12.2)	38 (11.6)	33 (10.1)	31 (9.4)	29 (8.8)
	80,000	2 Pipe or 2-in. (51 mm) Concentric	2 (51)	2 (51)	30 (9.1)	25 (7.6)	14 (4.3)	9 (2.7)	7 (2.1)	NA
			2-1/2 (64)	2-1/2 (64)	57 (17.4)	55 (16.8)	53 (16.2)	51 (15.5)	49 (14.9)	47 (14.3)
	100,000	2 Pipe or 3-in. (76 mm) Concentric	2-1/2 (64)	2-1/2 (64)	21 (6.4)	13 (4.0)	5 (1.5)	NA	NA	NA
			3 (76)	3 (76)	54 (16.5)	49 (14.9)	44 (13.4)	39 (11.9)	34 (10.4)	29 (8.8)
	120,000	2 Pipe or 3-in. (76 mm) Concentric	NA	3 (76)†	39 (11.9)	37 (11.3)	35 (10.7)	33 (10.1)	31 (9.4)	29 (8.8)
			4 (102)† no disk	4 (102)† no disk	10 (3.0)	5 (1.5)	NA	NA	NA	NA
	140,000	NA								

* Disk usage-Unless otherwise specified, use perforated disk assembly (factory-supplied in loose parts bag).

If one disk is stated, separate 2 halves of perforated disk assembly and use shouldered disk half. When using shouldered disk half, install screen side toward inlet box.

† Wide radius elbow.

‡ Vent sizing for Canadian installations over 4500 ft. (1372 M) above sea level are subject to acceptance by the local authorities having jurisdiction. NA-Not Allowed; pressure switch will not make.

1. Do not use pipe size greater than those specified in table or incomplete combustion, flame disturbance, or flame sense lockout may occur.
2. Size both the combustion-air and vent pipe independently, then use the larger diameter for both pipes.
3. Assume two 45° elbows equal one 90° elbow. Wide radius elbows are desirable and may be required in some cases.
4. Elbows and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
5. The minimum pipe length is 5 ft (1.5 M) for all applications.
6. Use 3-in. (76 mm) diameter vent termination kit for installations requiring 4-in (102 mm) diameter pipe.

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VENT LENGTH FOR OUTLET RESTRICTOR USAGE (60,000 BTU MODEL ONLY) - FT (M)‡

ALTITUDE – FT (M)	UNIT SIZE	DIRECT VENT (2–PIPE)	NON–DIRECT VENT (1–PIPE ONLY)	NO. OF 90° ELBOWS				
		PIPE DIA. (IN / mm)	PIPE DIA. (IN / mm)	1	2	3	4	5
0 – 2000 (0 – 610)	60,000	2–in. (51)	2–in. (51)	28 (8.5)	20 (6)	15 (4.2)	10 (3)	
2001 – 3000 (610 – 914)*		2–in. (51)	2–in. (51)	24 (7.3)	17 (5.1)	12 (3.6)	7 (2.1)	
3001 – 4000 (914 – 1219)		2–in. (51)	2–in. (51)	21 (6.4)	13 (3.9)	8 (2.4)		
4001 – 5000 (1219 – 1524)		2–in. (51)	2–in. (51)	17 (5.1)	10 (3)	5 (1.5)		
5001 – 6000 (1524 – 1829)		2–in. (51)	2–in. (51)	14 (4.2)	6 (1.8)			
6001 – 7000 (1829 – 2134)		2–in. (51)	2–in. (51)	10 (3)				
7001 – 8000 (2134 – 2438)		2–in. (51)	2–in. (51)	6 (1.8)				
8001 – 9000 (2438 – 2743)		2–in. (51)	2–in. (51)					
9001 – 10000 (2743 – 3048)		2–in. (51)	2–in. (51)					

*Canada

‡Discard outlet restrictor if vent lengths or elbows exceed the above table Discard restrictor if using 11/2–in. (38mm) diameter pipe. Refer to installation instructions for outlet restrictor installation guidelines.

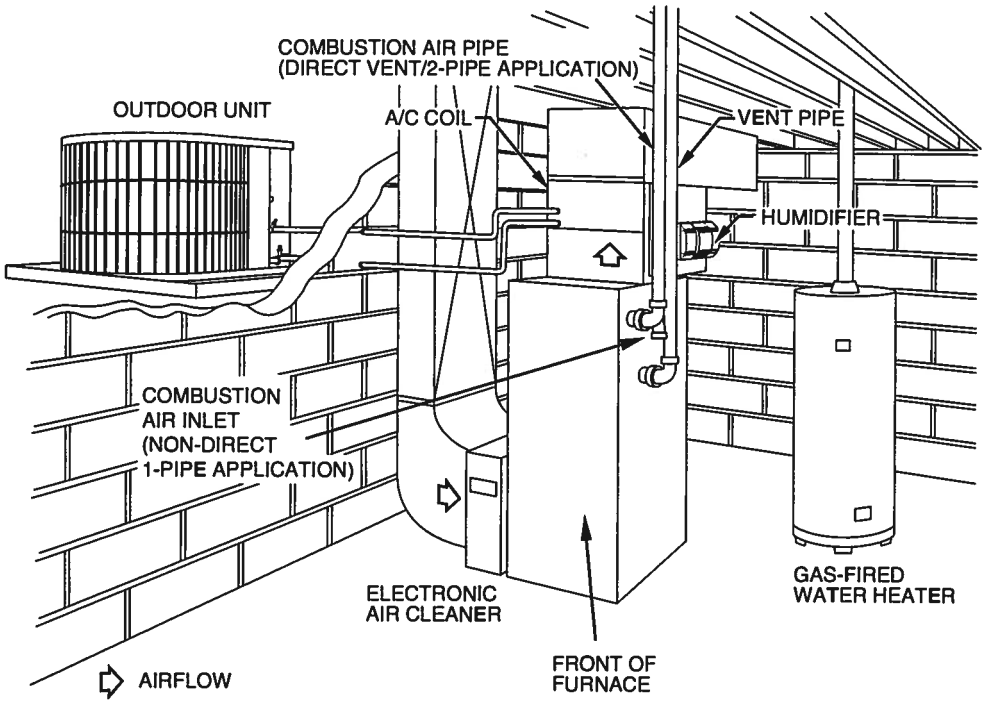
MAXIMUM ALLOWABLE EXPOSED VENT PIPE LENGTH (FT/M) WITH AND WITHOUT INSULATION IN WINTER DESIGN TEMPERATURE AMBIENT*

FURNACE SIZE	WINTER DESIGN TEMPERATURE °F (°C)	MAX PIPE DIAMETER IN (mm)	WITHOUT INSULATION FT (M)	WITH 3/8–IN. (10 mm) OR THICKER INSULATION† FT (M)
040	20 (−7)	1.5 (38)	51 (16)	70 (21)
	0 (−18)	1.5 (38)	28 (9)	70 (21)
	−20 (−29)	1.5 (38)	16 (5)	70 (21)
	20 (−7)	2 (51)	45 (14)	70 (21)
	0 (−18)	2 (51)	22 (7)	70 (21)
	−20 (−29)	2 (51)	10 (3)	58 (18)
060	20 (−7)	2 (51)	65 (20)	70 (21)
	0 (−18)	2 (51)	35 (11)	70 (21)
	−20 (−29)	2 (51)	20 (6)	70 (21)
080	20 (−7)	2 (51)	55 (17)	55 (17)
	0 (−18)	2 (51)	48 (15)	55 (17)
	−20 (−29)	2 (51)	30 (9)	55 (17)
	20 (−7)	2.5 (64)	70 (21)	70 (21)
	0 (−18)	2.5 (64)	47 (14)	70 (21)
	−20 (−29)	2.5 (64)	28 (9)	70 (21)
100	20 (−7)	2.5 (64)	40 (12)	40 (12)
	0 (−18)	2.5 (64)	40 (12)	40 (12)
	−20 (−29)	2.5 (64)	38 (12)	40 (12)
	20 (−7)	3 (76)	70 (21)	70 (21)
	0 (−18)	3 (76)	50 (15)	70 (21)
	−20 (−29)	3 (76)	28 (9)	70 (21)
120	20 (−7)	3 (76)	70 (21)	70 (21)
	0 (−18)	3 (76)	61 (19)	70 (21)
	−20 (−29)	3 (76)	37 (11)	70 (21)
	20 (−7)	4 (102)	70 (21)	70 (21)
	0 (−18)	4 (102)	48 (15)	70 (21)
	−20 (−29)	4 (102)	23 (7)	70 (21)
140	20 (−7)	3 (76)	60 (18)	60 (18)
	0 (−18)	3 (76)	60 (18)	60 (18)
	−20 (−29)	3 (76)	44 (13)	60 (18)
	20 (−7)	4 (102)	70 (21)	70 (21)
	0 (−18)	4 (102)	57 (17)	70 (21)
	−20 (−29)	4 (102)	30 (9)	70 (21)

* Pipe length (ft) specified for maximum pipe lengths located in unconditioned spaces. Pipes located in unconditioned space cannot exceed total allowable pipe length as specified in the "Maximum Allowable Pipe Length" chart.

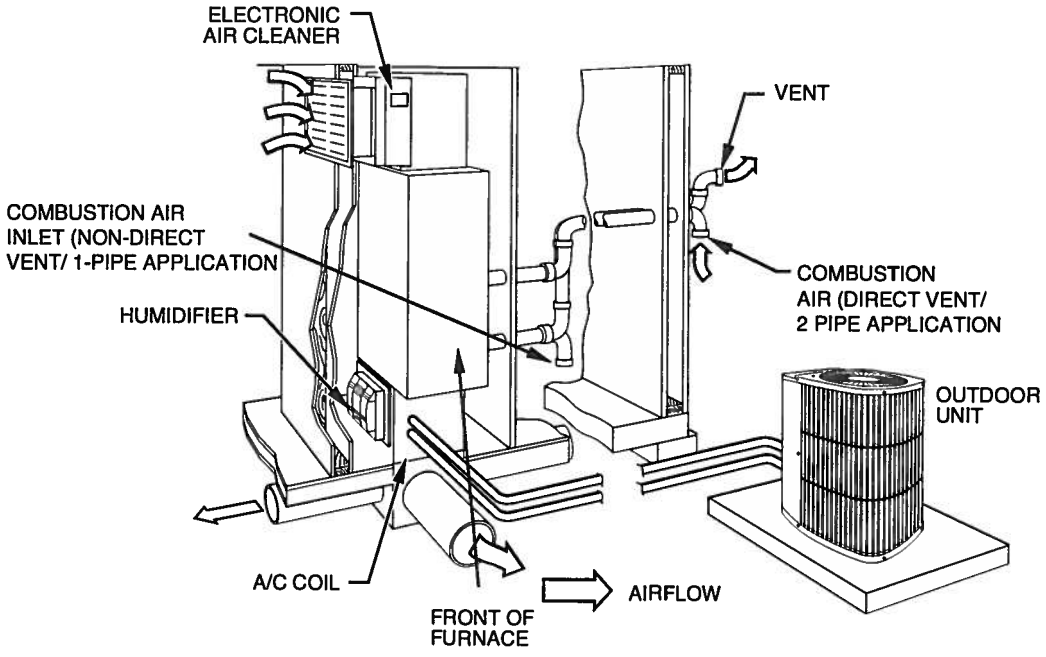
† Insulation thickness based on R value of 3.5 per in.

TYPICAL INSTALLATIONS



A05064

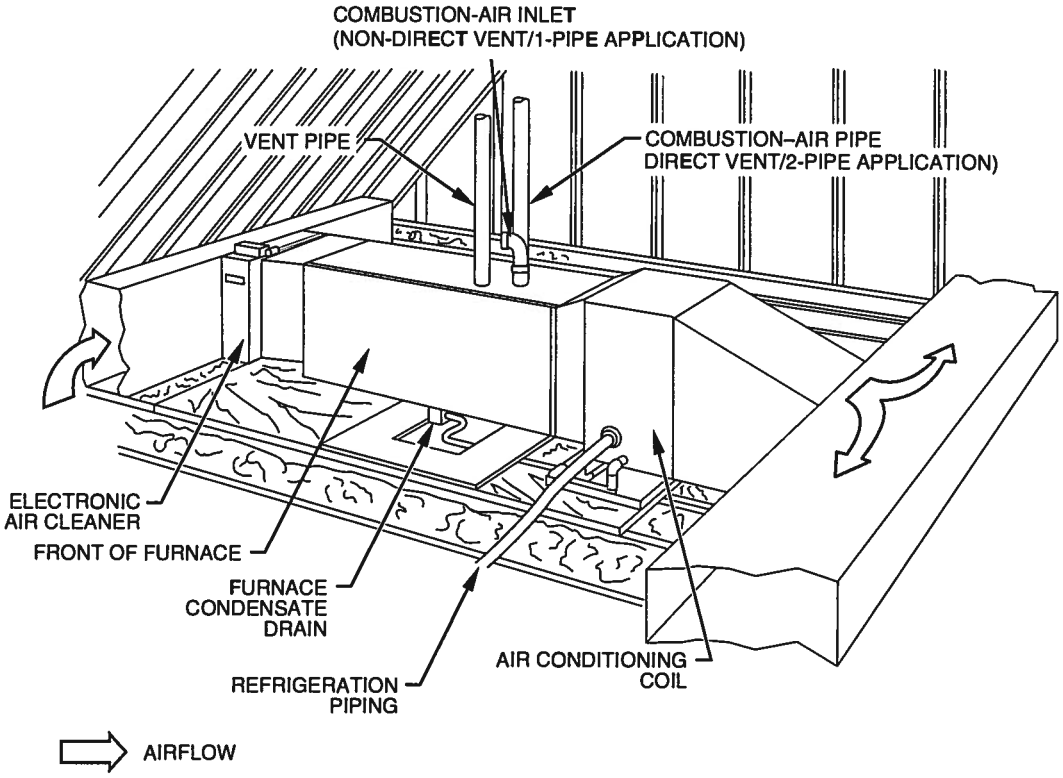
Basement - Upflow Application



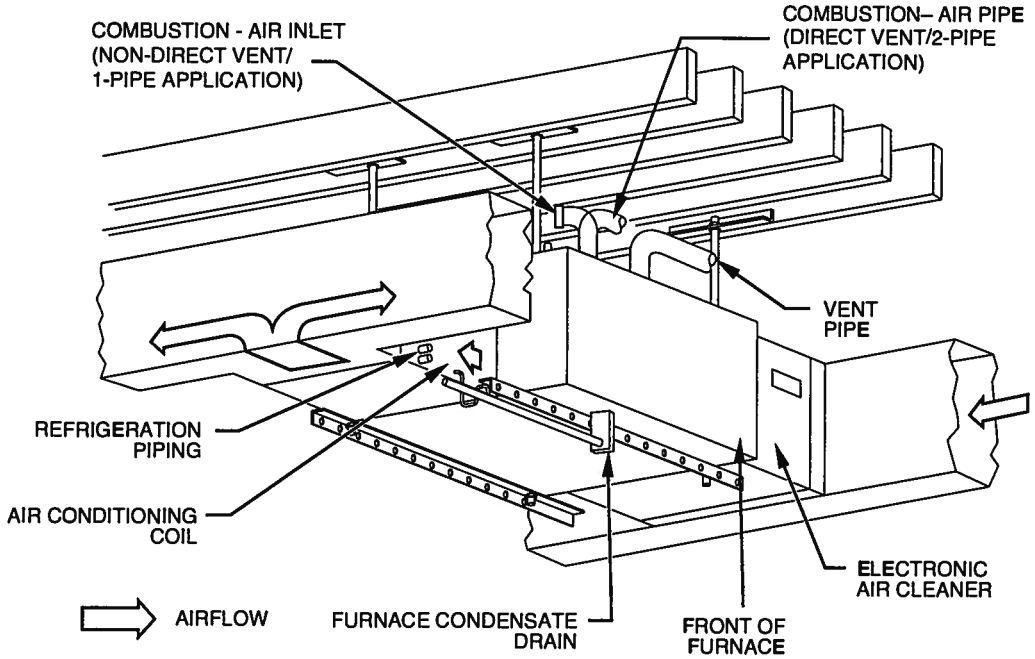
A05065

Closet - Downflow Application

TYPICAL INSTALLATIONS (CONTINUED)



Attic - Horizontal Application



Crawlspace - Horizontal Application

GUIDE SPECIFICATIONS

GENERAL

System Description

Furnish a _____ (4-way multipoise) fixed capacity gas-fired condensing furnace for use with natural gas or propane (factory authorized conversion kit required for propane); furnish cold air return plenum; furnish side (external) filter rack.

Quality Assurance

Unit will be designed, tested and constructed to the current ANSI Z21.47/CSA 2.3 design standard for gas-fired central furnaces. Unit will be 3rd party certified by CSA to the current ANSI Z21.47/CSA 2.3 design standard for gas-fired central furnaces. Unit will carry the CSA Blue Star® and Blue Flame® labels.

Unit efficiency testing will be performed per the current DOE test procedure as listed in the Federal Register.

Unit will be certified for capacity and efficiency and listed in the latest GAMA Consumer's Directory of Certified Efficiency Ratings.

Unit will carry the current Federal Trade Commission Energy Guide efficiency label.

Delivery, Storage, and Handling

Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

Warranty (for inclusion by specifying engineer) U.S. and Canada only. Warranty certificate available upon request.

PRODUCTS

Equipment

Components shall include: slow-opening gas valve to reduce ignition noise, regulate gas flow, with electric switch gas shut-off; flame proving sensor, hot surface igniter, pressure switch assembly verifies inducer operation; flame rollout switch, drain tubing and installed condensate drain trap, blower and inducer assembly, 40va transformer; low-voltage (heating) (heating/ cooling) thermostat.

Blower Wheel and Blower Motor

Galvanized blower wheel shall be centrifugal type, statically and dynamically balanced. Blower motor of PSC type shall be permanently lubricated with sealed bearings, of _____ hp, and shall be multiple-speed direct drive. Blower motor shall be soft mounted to the blower scroll to reduce vibration transmission.

Filters

Furnace shall have reusable-type filters. Filter shall be _____ in. (mm) x _____in. (mm).

Casing

Casing shall be of .030 in. (.76 mm) thickness minimum, pre-painted galvanized steel.

Inducer Motor

Inducer motor shall be soft mounted to reduce vibration transmission.

Primary Heat Exchangers

Primary Heat exchangers shall be 3-Pass 20 gauge corrosion resistant aluminized steel of fold-and-crimp sectional design, which operates under negative pressure. Secondary Heat Exchangers Secondary Heat exchangers shall be of a flow-through design having a patented interior laminate coating of polypropylene for greater corrosion resistance with fold-and-crimp design, which operates under negative pressure.

Controls

Controls shall include a microprocessor based integrated electronic control board with at least 11 service troubleshooting codes displayed via diagnostic flashing LED light on the control, has ability to store fault codes, when activated a self-test feature checks all major functions of the furnace within one minute, and a replaceable automotive-type circuit protection fuse. Multiple operational settings available including separate blower speeds. Cooling airflow will be selectable between 350 or 400 CFM per ton of air conditioning.

Operating Characteristics

Heating Capacity shall be _____ Btuh input; _____ Btuh output capacity. Fuel Gas Efficiency shall be 92% AFUE. Air delivery shall be _____ cfm minimum at 0.50 in. wg. external static pressure. Dimensions shall be: depth _____ in. (mm); width _____ in. (mm); height _____ in. (mm) (casing only). Height shall be _____ in. (mm) with A/C coil and _____ in. (mm) overall with plenum.

Electrical Requirements

Electrical supply shall be 115 volts, 60 Hz, single-phase (nominal). Minimum wire size shall be _____ AWG; maximum fuse size or HACR-type, designated circuit breaker shall be _____ Amps.

Special Features

Refer to section of the product data sheet identifying accessories and descriptions for specific features and available enhancements.

 Printed in U.S.A. Edition Date: 09/09 Catalog No: 58MCB-4PD

 Replaces: 58MCB-3PD

Trane Furnaces

TRANE™

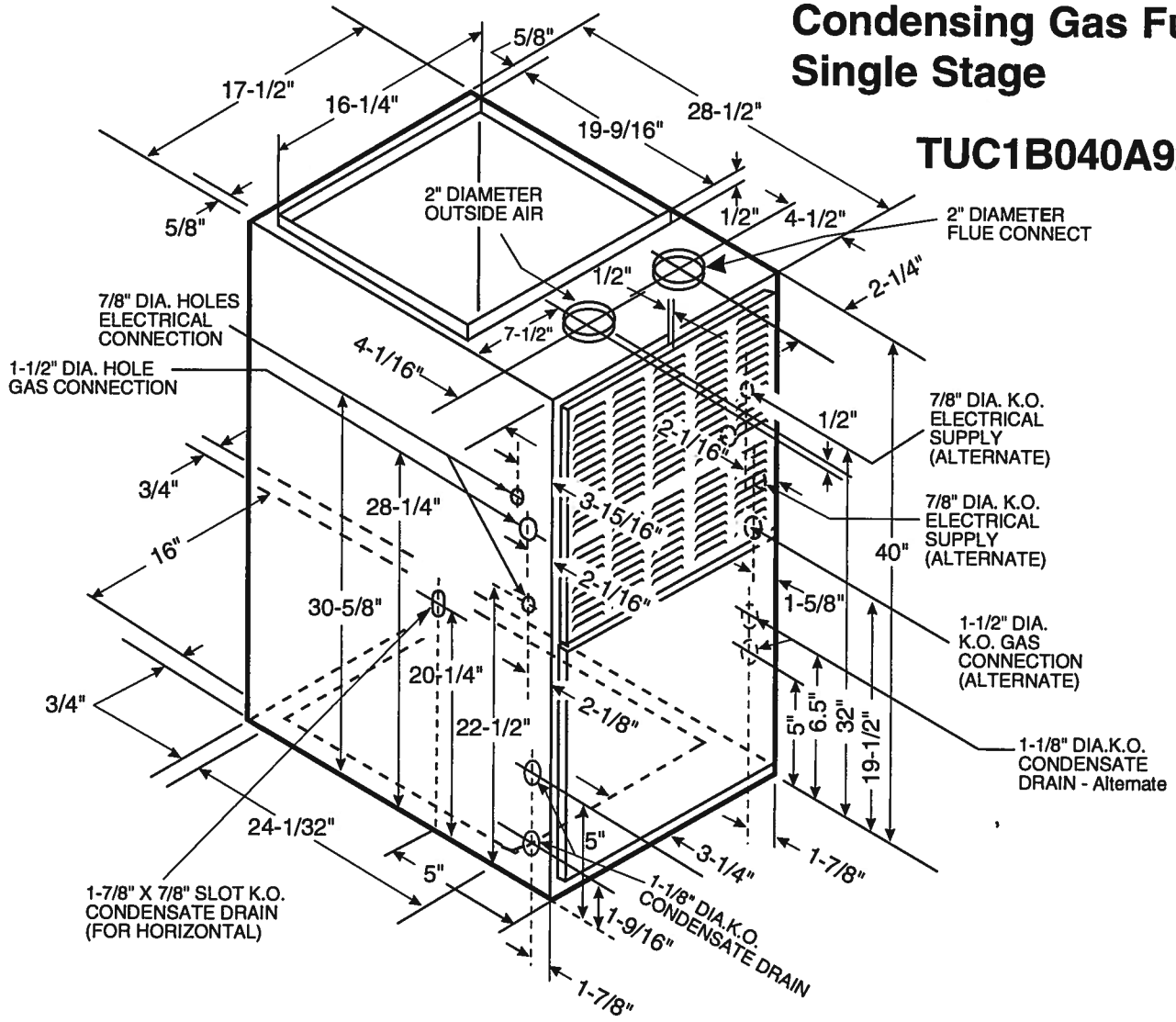
TUC1B040-SUB-1

TAG: _____

SUBMITTAL

Upflow / Horizontal Condensing Gas Furnace Single Stage

TUC1B040A9241A



FURNACE AIRFLOW (CFM) VS. EXTERNAL STATIC PRESSURE (INS. w.g.)										
MODEL	SPEED TAP	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
TUC1B040A9241A	4 - HIGH - Black	1043	992	930	885	812	740	647	518	457
	3 - MED.-HIGH - Blue	940	895	841	791	726	650	559	420	390
	2 - MED.-LOW - Yellow	837	798	752	705	649	560	438	305	279
	1 - LOW - Red	729	694	657	600	545	478	376	220	178

CFM VS. TEMPERATURE RISE					
MODEL	Cubic Feet Per Minute (CFM)				
	600	700	800	900	1000
TUC1B040A9241A	56	48	42	37	33

General Data ①

TYPE	Upflow / Horizontal
RATINGS ②	
Input BTUH	40,000
Capacity BTUH (ICS) ③	37,000
AFUE	92.0
Temp. rise (Min.-Max.) °F.	30 - 60
BLOWER DRIVE	DIRECT
Diameter-Width (In.)	9 x 7
No. Used	1
Speeds (No.)	4
CFM vs. in. w.g.	See Fan Performance
Motor HP	1/5
R.P.M.	1075
Volts/Ph/Hz	115/1/60
COMBUSTION FAN - Type	Centrifugal
Drive - No. Speeds	Direct - 1
Motor HP - RPM	1/55- 3000
Volts/Ph/Hz	115/1/60
F.L. Amps	1.0
FILTER — Furnished?	No
Type Recommended	High Velocity
Hi Vel. (No.-Size-Thk.)	1 - 17x25 - 1in.

VENT COLLAR — Size (in.)	2 Round
HEAT EXCHANGER	
Type-Fired	Alum. Steel
-Unfired	
Gauge (Fired)	20
ORIFICES — Main	
Nat.Gas. Qty. — Drill Size	2 — 45
L.P. Gas Qty. — Drill Size	2 — 56
GAS VALVE	Redundant - Single Stage
PILOT SAFETY DEVICE	
Type	Hot Surface Ignition
BURNERS — Type	Multiport Inshot
Number	2
POWER CONN. — V/Ph/Hz ④	115/1/60
Ampacity (In Amps)	4.78
Max. Overcurrent Protection (amps)	15
PIPE CONN. SIZE (IN.)	1/2
DIMENSIONS	H x W x D
Crated (In.)	41- 3/4 x 19-1/2 x 30-1/2
Uncrated (In.)	40 x 17-1/2 x 28
WEIGHT	
Shipping (Lbs.) / Net (Lbs)	139 / 129

① Central Furnace heating designs are certified by the American Gas Association Inc. Laboratories.
② Ratings shown are for elevations up to 2000 feet. For elevations above 2000 feet; Ratings should be reduced at the rate of 4% for each 1000 feet above sea level.
③ Based on U.S. Government Standard Tests.
④ The above wiring specifications are in accordance with National Electrical Code; however, installations must comply with local codes.

Mechanical Specifications

NATURAL GAS MODELS—Central heating furnace designs are certified by the American Gas Association for both natural and L.P. gas. Limit setting and rating data were established and approved under standard rating conditions using American National Standards Institute standards.

SAFE OPERATION — The Integrated System Control has solid state devices, which continuously monitor for presence of flame, when the system is in the heating mode of operation. Slow opening, dual solenoid combination gas valve and regulator provide extra safety and quieter operation.

QUICK HEATING—Durable, cycle tested, heavy gauge **aluminized steel heat exchanger and stainless steel secondary heat exchanger** quickly transfer over 90% of the heat to provide warm conditioned air to the structure. **Low energy power vent blower**, to increase efficiency and provide a positive discharge of gas fumes to the outside.

BURNERS — Multi-port, in-shot burners will give years of quiet and efficient service. All models can be converted to **L.P. gas** without changing burners.

INTEGRATED SYSTEM CONTROL—Exclusively designed operational program provides total control of furnace limit sensors, blowers, gas valve, flame control and includes self diagnostics for ease of service. The built-in, selectable **"Cooling Fan Off"** feature provides time-delay capability like a BAY24X045 Time-Delay Kit for cooling operation. Also contains connection points for E.A.C./humidifier.

AIR DELIVERY — The multispeed, direct-drive blower motor, with sufficient airflow range for most heating and cooling requirements, will switch from heating to cooling speeds on demand from room thermostat. The blower door safety switch will prevent or terminate furnace operation when the blower door is removed. (Fan relay and 35VA control transformer is standard).

STYLING — Heavy gauge steel and "wraparound" cabinet construction is used in the cabinet with baked-on enamel finish for strength and beauty. The heat exchanger section of the cabinet is completely lined with foil-faced fiberglass insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating qualities of fiberglass.

FEATURES AND GENERAL OPERATION — These High Efficiency, Direct Vent, Condensing Gas Furnaces employ a Hot Surface Ignition system, which eliminates the waste of a constantly burning pilot. They are convertible for HORIZONTAL use by rotating the unit to its left side. The integrated system control lights the main burners upon a demand for heat from the room thermostat. Complete front service access.

a. Low energy power venter.
b. Vent proving differential switch.

Technical Literature - Printed in U.S.A.

Trane
A business of American Standard Companies
6200 Troup Highway
Tyler, TX 75707
www.trane.com

DESIGN CERTIFIED ®

CERTIFIED ®

TRANE™

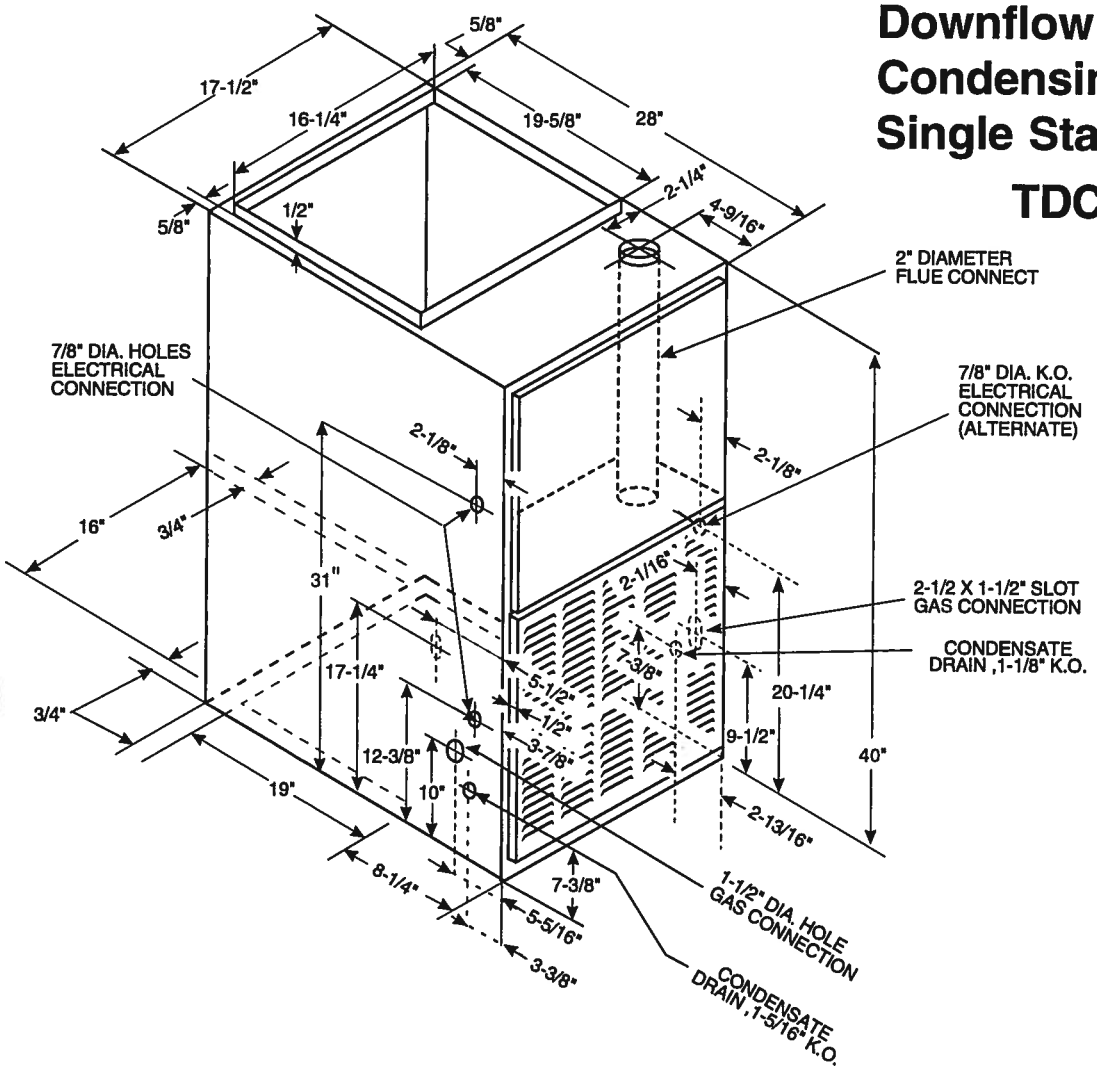
TDC1B040A-SUB-1

TAG: _____

SUBMITTAL

Downflow / Horizontal Condensing Gas Furnace Single Stage

TDC1B040A9241A



FURNACE AIRFLOW (CFM) VS. EXTERNAL STATIC PRESSURE (inches w.g.)										
MODEL	**SPEED TAP**	**0.10**	**0.20**	**0.30**	**0.40**	**0.50**	**0.60**	**0.70**	**0.80**	**0.90**
TDC1B040A9241A	4 - HIGH - Black	998	965	922	870	807	735	653	561	459
	3 - MED.-HIGH - Blue	856	832	797	751	695	628	550	462	363
	2 - MED.-LOW - Yellow	753	728	694	650	596	533	460	378	286
	1 - LOW - Red	647	617	581	538	490	435	375	308	235

CFM VS. TEMPERATURE RISE					
MODEL	**Cubic Feet Per Minute (CFM)**				
	600	700	800	900	1000
TDC1B040A9241A	56	48	42	37	34

General Data ①

TYPE	Downflow / Horizontal
RATINGS ②	
Input BTUH	40,000
Capacity BTUH (ICS) ③	38,000
AFUE	91.0
Temp. rise (Min.-Max.) °F.	30 - 60
BLOWER DRIVE	DIRECT
Diameter-Width (In.)	10 x 7
No. Used	1
Speeds (No.)	4
CFM vs. in. w.g.	See Fan Performance
Motor HP	1/5
R.P.M.	1080
Volts/Ph/Hz	115/1/60
COMBUSTION FAN - Type	Centrifugal
Drive - No. Speeds	Direct - 1
Motor HP - RPM	1/55 - 3000
Volts/Ph/Hz	115/1/60
F.L. Amps	1.0
FILTER — Furnished?	No
Type Recommended	High Velocity
Hi Vel. (No.-Size-Thk.)	2 - 14 x 20 - 1in.

VENT COLLAR — Size (in.)	2 Round
HEAT EXCHANGER	
Type-Fired	Alum. Steel
-Unfired	
Gauge (Fired)	20
ORIFICES — Main	
Nat.Gas. Qty. — Drill Size	2 — 45
L.P. Gas Qty. — Drill Size	2 — 56
GAS VALVE	Redundant - Single Stage
PILOT SAFETY DEVICE	
Type	Hot Surface Ignition
BURNERS — Type	Multiport Inshot
Number	2
POWER CONN. — V/Ph/Hz ④	115/1/60
Ampacity (In Amps)	4.8
Max. Overcurrent Protection (amps)	15
PIPE CONN. SIZE (IN.)	1/2
DIMENSIONS	H x W x D
Crated (In.)	41-3/4 x 19-1/2 x 30-1/2
Uncrated (In.)	40 x 17-1/2 x 28-1/2
WEIGHT	
Shipping (Lbs.) / Net (Lbs)	145 / 135

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BURNERS — Multi-port, in-shot burners will give years of quiet and efficient service. All models can be converted to **L.P. gas** without changing burners.

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a. Low energy power venter.
b. Vent proving differential switch.

Literature Order Number	TDC1B040A-SUB-1
File Number	TDC1B040A-SUB-1
Supersedes	TDC1B040A9241A
Date	06/08

Technical Literature - Printed in U.S.A.

Trane
6200 Troup Highway
Tyler, TX 75707
www.trane.com

TRANE™

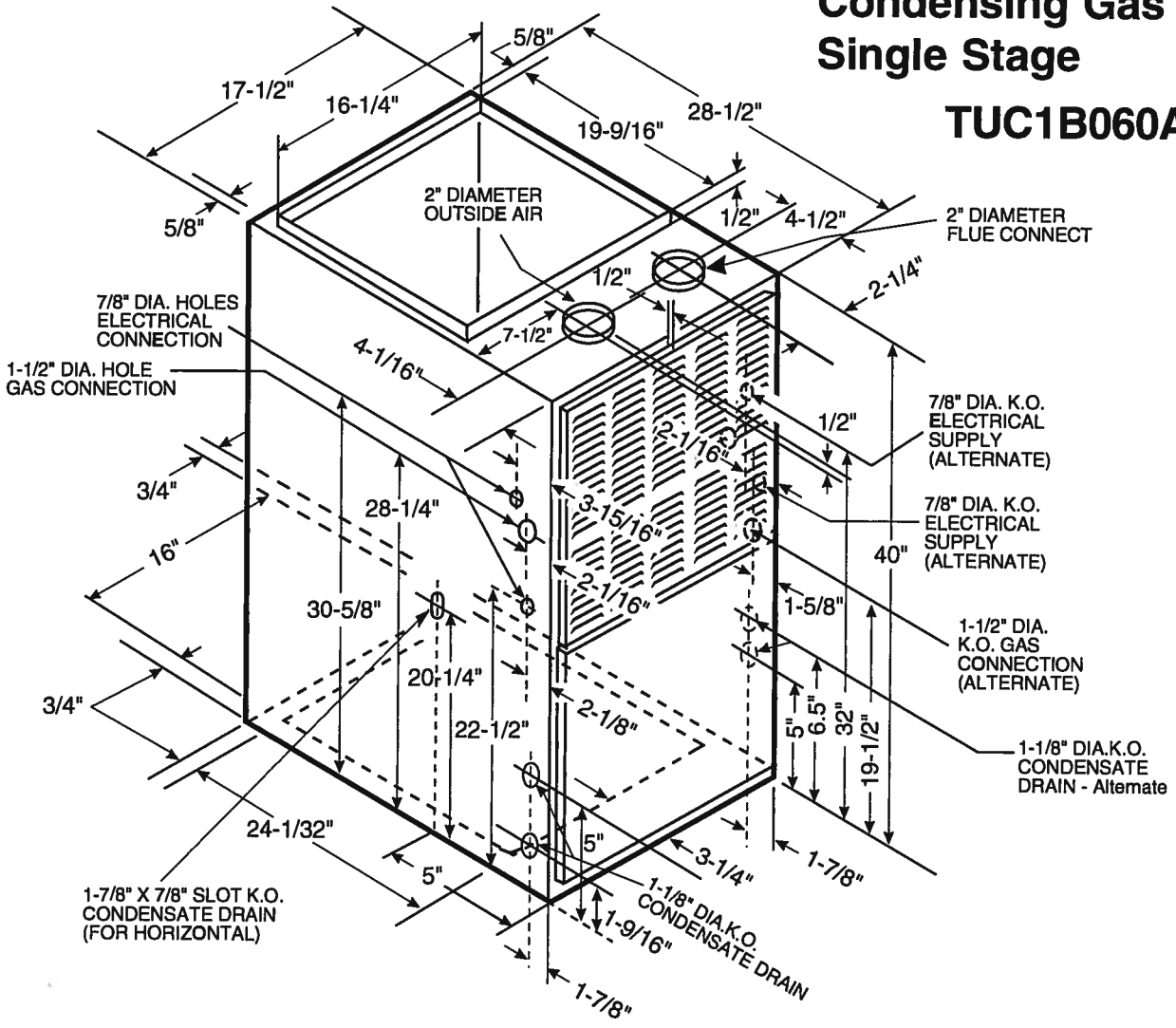
TUC1B060-SUB-1

TAG: _____

SUBMITTAL

Upflow / Horizontal Condensing Gas Furnace Single Stage

TUC1B060A9361A



FURNACE AIRFLOW (CFM) VS. EXTERNAL STATIC PRESSURE (INS. w.g.)										
MODEL	**SPEED TAP**	**0.10**	**0.20**	**0.30**	**0.40**	**0.50**	**0.60**	**0.70**	**0.80**	**0.90**
TUC1B060A9361A	4 - HIGH - Black	1394	1359	1314	1260	1196	1122	1038	945	843
	3 - MED.-HIGH - Blue	1250	1232	1202	1160	1106	1040	962	873	771
	2 - MED.-LOW - Yellow	1102	1092	1069	1034	986	925	852	766	668
	1 - LOW - Red	957	944	922	891	853	806	750	686	614

CFM VS. TEMPERATURE RISE						
MODEL	**Cubic Feet Per Minute (CFM)**					
	900	**1000**	**1100**	**1200**	**1300**	**1400**
TUC1B060A9361A	56	50	45	42	39	36

General Data ①

TYPE	Upflow / Horizontal
RATINGS ②	
Input BTUH	60,000
Capacity BTUH (ICS) ③	56,000
AFUE	92.0
Temp. rise (Min.-Max.) °F.	30 - 60
BLOWER DRIVE	DIRECT
Diameter-Width (In.)	10 x 7
No. Used	1
Speeds (No.)	4
CFM vs. in. w.g.	See Fan Performance
Motor HP	1/3
R.P.M.	1075
Volts/Ph/Hz	115/1/60
COMBUSTION FAN - Type	Centrifugal
Drive - No. Speeds	Direct - 1
Motor HP - RPM	1/55- 3000
Volts/Ph/Hz	115/1/60
F.L. Amps	1.0
FILTER — Furnished?	No
Type Recommended	High Velocity
Hi Vel. (No.-Size-Thk.)	1 - 17x25 - 1in.

VENT COLLAR — Size (in.)	2 Round
HEAT EXCHANGER	
Type-Fired	Alum. Steel
-Unfired	
Gauge (Fired)	20
ORIFICES — Main	
Nat.Gas. Qty. — Drill Size	3 — 45
L.P. Gas Qty. — Drill Size	3 — 56
GAS VALVE	Redundant - Single Stage
PILOT SAFETY DEVICE	
Type	Hot Surface Ignition
BURNERS — Type	Multiport Inshot
Number	3
POWER CONN. — V/Ph/Hz ④	115/1/60
Ampacity (In Amps)	8.4
Max. Overcurrent Protection (amps)	15
PIPE CONN. SIZE (IN.)	1/2
DIMENSIONS	H x W x D
Crated (In.)	41- 3/4 x 19-1/2 x 30-1/2
Uncrated (In.)	40 x 17-1/2 x 28
WEIGHT	
Shipping (Lbs.) / Net (Lbs)	150 / 140

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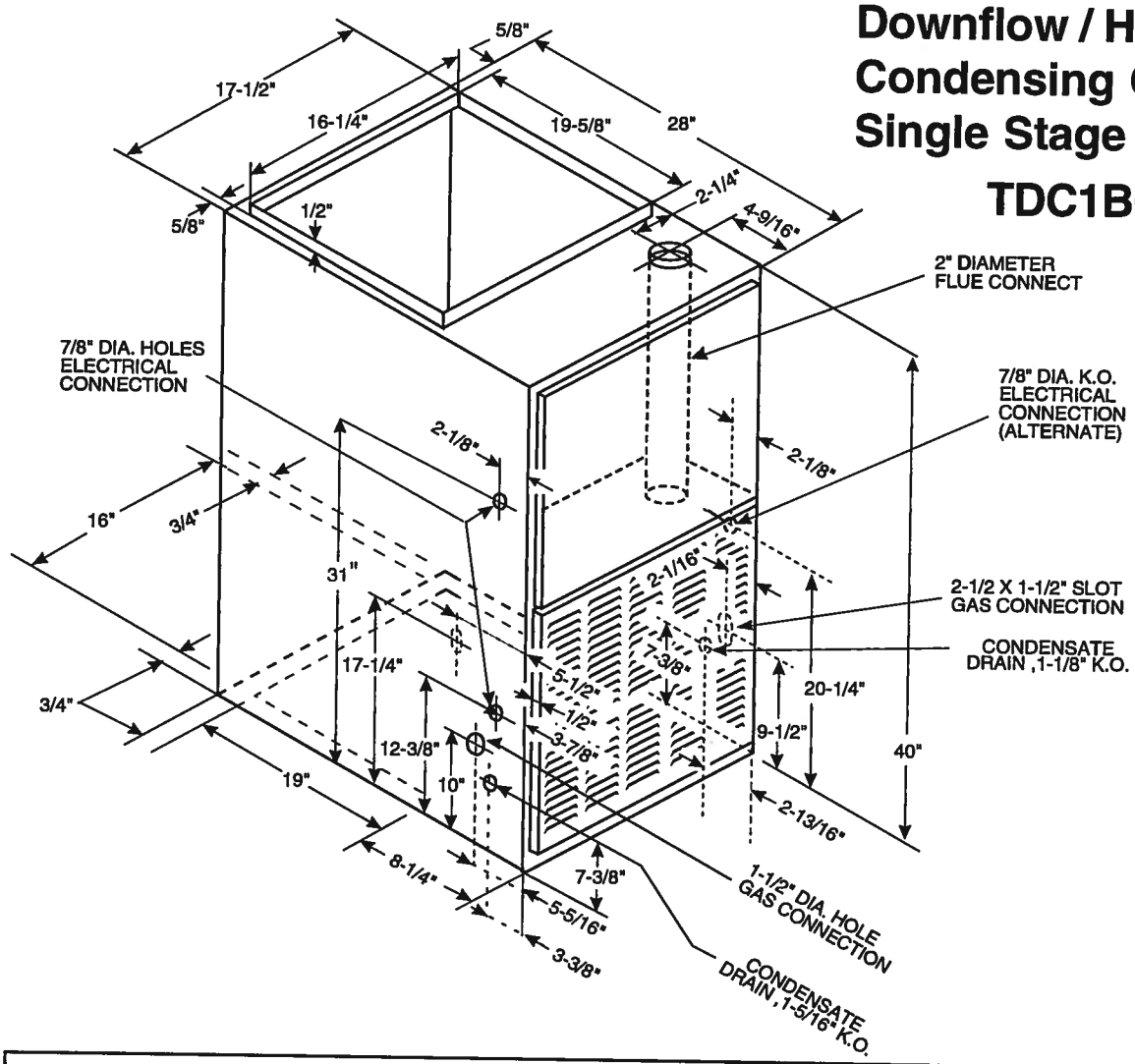
TDC1B060A-SUB-1

TAG: _____

SUBMITTAL

Downflow / Horizontal Condensing Gas Furnace Single Stage

TDC1B060A9361A



FURNACE AIRFLOW (CFM) VS. EXTERNAL STATIC PRESSURE (inches w.g.)										
MODEL	SPEED TAP	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
TDC1B060A9361A	4 - HIGH - Black	1341	1285	1223	1156	1082	1004	919	829	734
	3 - MED.-HIGH - Blue	1198	1161	1115	1060	996	923	842	751	652
	2 - MED.-LOW - Yellow	1369	1232	1108	998	901	817	747	689	645
	1 - LOW - Red	784	781	767	741	703	654	593	521	437

CFM VS. TEMPERATURE RISE								
MODEL	Cubic Feet Per Minute (CFM)							
	800	900	1000	1100	1200	1300	1400	1500
TDC1B060A9361A	63	56	51	46	42	39	36	34

General Data ①

TYPE	Downflow / Horizontal
RATINGS ②	
Input BTUH	60,000
Capacity BTUH (ICS) ③	56,000
AFUE	91.0
Temp. rise (Min.-Max.) °F.	35 - 65
BLOWER DRIVE	DIRECT
Diameter-Width (In.)	10 x 8
No. Used	1
Speeds (No.)	4
CFM vs. in. w.g.	See Fan Performance
Motor HP	1/3
R.P.M.	1075
Volts/Ph/Hz	115/1/60
COMBUSTION FAN - Type	Centrifugal
Drive - No. Speeds	Direct - 1
Motor HP - RPM	1/55 - 3000
Volts/Ph/Hz	115/1/60
F.L. Amps	1.0
FILTER — Furnished?	No
Type Recommended	High Velocity
Hi Vel. (No.-Size-Thk.)	2 - 14 x 20 - 1in.

VENT COLLAR — Size (in.)	2 Round
HEAT EXCHANGER	
Type-Fired	Alum. Steel
-Unfired	
Gauge (Fired)	20
ORIFICES — Main	
Nat.Gas. Qty. — Drill Size	3 — 45
L.P. Gas Qty. — Drill Size	3 — 56
GAS VALVE	Redundant - Single Stage
PILOT SAFETY DEVICE	
Type	Hot Surface Ignition
BURNERS — Type	Multiport Inshot
Number	3
POWER CONN. — V/Ph/Hz ④	115/1/60
Ampacity (In Amps)	9.2
Max. Overcurrent Protection (amps)	15
PIPE CONN. SIZE (IN.)	1/2
DIMENSIONS	H x W x D
Crated (In.)	41-3/4 x 19-1/2 x 30-1/2
Uncrated (In.)	40 x 17-1/2 x 28-1/2
WEIGHT	
Shipping (Lbs.) / Net (Lbs)	155 / 145

① Central Furnace heating designs are certified by the American Gas Association inc. Laboratories.
② Ratings shown are for elevations up to 2000 feet. For elevations above 2000 feet; Ratings should be reduced at the rate of 4% for each 1000 feet above sea level.
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④ The above wiring specifications are in accordance with National Electrical Code; however, installations must comply with local codes.

Mechanical Specifications

NATURAL GAS MODELS—Central heating furnace designs are certified by the American Gas Association for both natural and L.P. gas. Limit setting and rating data were established and approved under standard rating conditions using American National Standards Institute standards.

SAFE OPERATION — The Integrated System Control has solid state devices, which continuously monitor for presence of flame, when the system is in the heating mode of operation. Dual solenoid combination gas valve and regulator provide extra safety.

QUICK HEATING—Durable, cycle tested, heavy gauge **aluminized steel heat exchanger** quickly transfers heat to provide warm conditioned air to the structure. **Low energy power vent blower**, to increase efficiency and provide a positive discharge of gas fumes to the outside.

BURNERS — Multi-port, in-shot burners will give years of quiet and efficient service. All models can be converted to **L.P. gas** without changing burners.

INTEGRATED SYSTEM CONTROL—Exclusively designed operational program provides total control of furnace limit sensors, blowers, gas valve, flame control and includes self diagnostics for ease of service.

AIR DELIVERY — The multispeed, direct-drive blower motor, with sufficient airflow range for most heating and cooling requirements, will switch from heating to cooling speeds on demand from room thermostat. The blower door safety switch will prevent or terminate furnace operation when the blower door is removed. (Fan relay and 35VA control transformer is standard).

STYLING — Heavy gauge steel and "wraparound" cabinet construction is used in the cabinet with baked-on enamel finish for strength and beauty. The heat exchanger section of the cabinet is completely lined with foil-faced fiberglass insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating qualities of fiberglass.

FEATURES AND GENERAL OPERATION — These High Efficiency Gas Furnaces employ a Hot Surface Ignition system, which eliminates the waste of a constantly burning pilot. The integrated system control lights the main burners upon a demand for heat from the room thermostat. Complete front service access.

a. Low energy power venter.
b. Vent proving differential switch.

DESIGN CERTIFIED®

CERTIFIED®

Literature Order Number	TDC1B060A-SUB-1
File Number	TDC1B060A-SUB-1
Supersedes	TDC1B060A9361A
Date	06/08

Technical Literature - Printed in U.S.A.

Trane
6200 Troup Highway
Tyler, TX 75707
www.trane.com

TRANE™

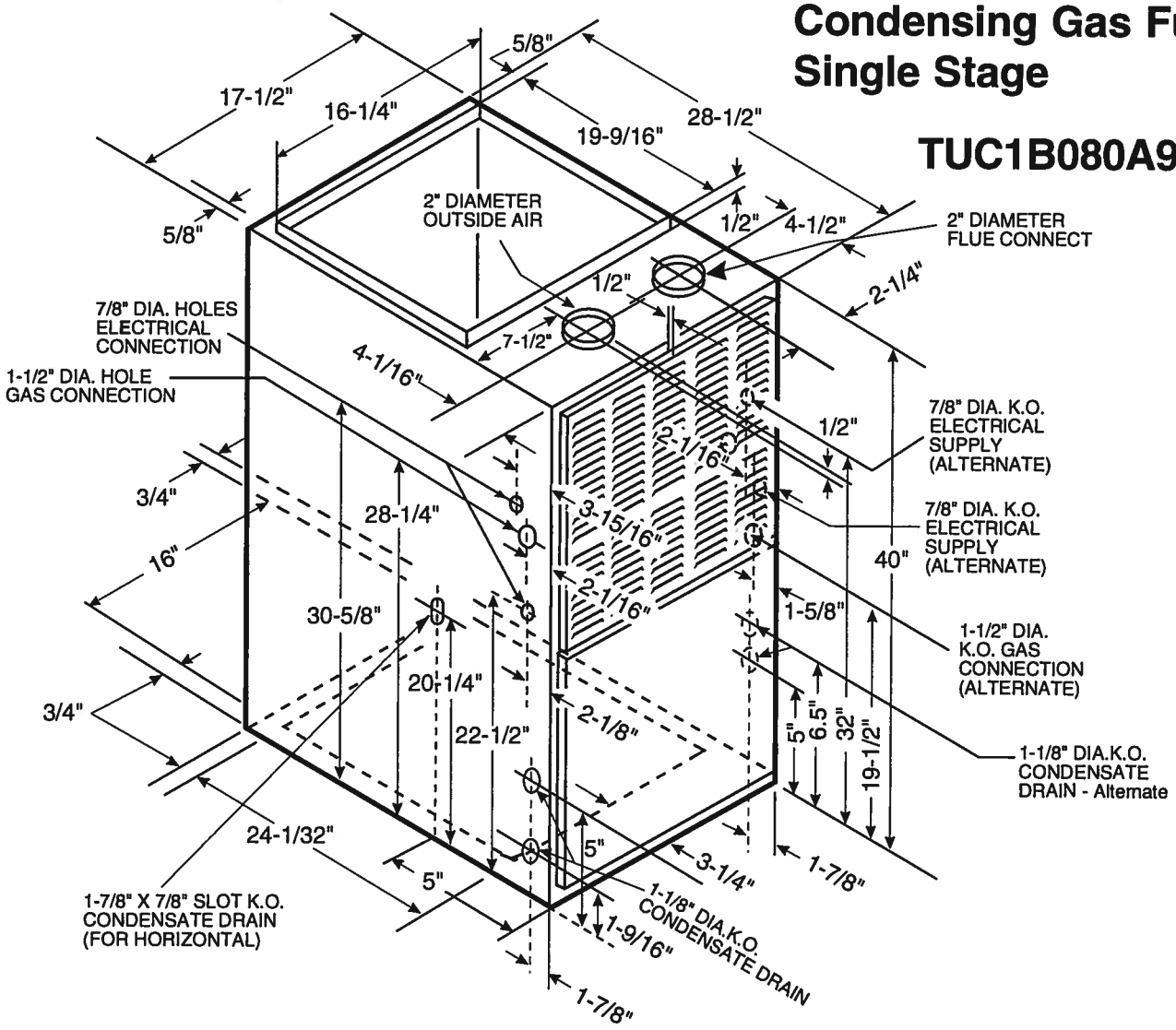
TUC1B080-SUB-1

TAG: _____

SUBMITTAL

Upflow / Horizontal Condensing Gas Furnace Single Stage

TUC1B080A9421A



FURNACE AIRFLOW (CFM) VS. EXTERNAL STATIC PRESSURE (INS. w.g.)										
MODEL	SPEED TAP	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
TUC1B080A9421A	4 - HIGH - Black	1748	1683	1615	1544	1470	1393	1314	1232	1147
	3 - MED.-HIGH - Blue	1375	1367	1347	1314	1268	1210	1139	1056	960
	2 - MED.-LOW - Yellow	1178	1167	1147	1119	1082	1036	982	919	847
	1 - LOW - Red	859	863	856	839	811	772	723	663	592

CFM VS. TEMPERATURE RISE						
MODEL	Cubic Feet Per Minute (CFM)					
	1100	1200	1300	1400	1500	1600
TUC1B080A9421A	61	56	51	48	44	42

General Data ①

TYPE	Upflow / Horizontal
RATINGS ②	
Input BTUH	80,000
Capacity BTUH (ICS) ③	74,000
AFUE	92.0
Temp. rise (Min.-Max.) °F.	35 - 65
BLOWER DRIVE	DIRECT
Diameter-Width (In.)	10 x 8
No. Used	1
Speeds (No.)	4
CFM vs. in. w.g.	See Fan Performance
Motor HP	1/3
R.P.M.	1075
Volts/Ph/Hz	115/1/60
COMBUSTION FAN - Type	Centrifugal
Drive - No. Speeds	Direct - 1
Motor HP - RPM	1/25- 3200
Volts/Ph/Hz	115/1/60
F.L. Amps	1.35
FILTER — Furnished?	No
Type Recommended	High Velocity
Hi Vel. (No.-Size-Thk.)	1 - 17x25 - 1in.

VENT COLLAR — Size (in.)	2 Round
HEAT EXCHANGER	
Type-Fired	Alum. Steel
-Unfired	
Gauge (Fired)	20
ORIFICES — Main	
Nat.Gas. Qty. — Drill Size	4 — 45
L.P. Gas Qty. — Drill Size	4 — 56
GAS VALVE	Redundant - Single Stage
PILOT SAFETY DEVICE	
Type	Hot Surface Ignition
BURNERS — Type	Multiport Inshot
Number	4
POWER CONN. — V/Ph/Hz ④	115/1/60
Ampacity (In Amps)	9.5
Max. Overcurrent Protection (amps)	15
PIPE CONN. SIZE (IN.)	1/2
DIMENSIONS	H x W x D
Crated (In.)	41- 3/4 x 19-1/2 x 30-1/2
Uncrated (In.)	40 x 17-1/2 x 28
WEIGHT	
Shipping (Lbs.) / Net (Lbs)	158 / 148

① Central Furnace heating designs are certified by the American Gas Association Inc. Laboratories.
② Ratings shown are for elevations up to 2000 feet. For elevations above 2000 feet; Ratings should be reduced at the rate of 4% for each 1000 feet above sea level.
③ Based on U.S. Government Standard Tests.
④ The above wiring specifications are in accordance with National Electrical Code; however, installations must comply with local codes.

Mechanical Specifications

NATURAL GAS MODELS—Central heating furnace designs are certified by the American Gas Association for both natural and L.P. gas. Limit setting and rating data were established and approved under standard rating conditions using American National Standards Institute standards.

SAFE OPERATION — The Integrated System Control has solid state devices, which continuously monitor for presence of flame, when the system is in the heating mode of operation. Slow opening, dual solenoid combination gas valve and regulator provide extra safety and quieter operation.

QUICK HEATING—Durable, cycle tested, heavy gauge **aluminized steel heat exchanger and stainless steel secondary heat exchanger** quickly transfer over 90% of the heat to provide warm conditioned air to the structure. **Low energy power vent blower**, to increase efficiency and provide a positive discharge of gas fumes to the outside.

BURNERS — Multi-port, in-shot burners will give years of quiet and efficient service. All models can be converted to **L.P. gas** without changing burners.

INTEGRATED SYSTEM CONTROL— Exclusively designed operational program provides total control of furnace limit sensors, blowers, gas valve, flame control and includes self diagnostics for ease of service. The built-in, selectable **"Cooling Fan Off"** feature provides time-delay capability like a BAY24X045 Time-Delay Kit for cooling operation. Also contains connection points for E.A.C./humidifier.

AIR DELIVERY — The multispeed, direct-drive blower motor, with sufficient airflow range for most heating and cooling requirements, will switch from heating to cooling speeds on demand from room thermostat. The blower door safety switch will prevent or terminate furnace operation when the blower door is removed. (Fan relay and 35VA control transformer is standard).

STYLING — Heavy gauge steel and "wraparound" cabinet construction is used in the cabinet with baked-on enamel finish for strength and beauty. The heat exchanger section of the cabinet is completely lined with foil-faced fiberglass insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating qualities of fiberglass.

FEATURES AND GENERAL OPERATION — These High Efficiency, Direct Vent, Condensing Gas Furnaces employ a Hot Surface Ignition system, which eliminates the waste of a constantly burning pilot. They are convertible for HORIZONTAL use by rotating the unit to its left side. The integrated system control lights the main burners upon a demand for heat from the room thermostat. Complete front service access.

a. Low energy power venter.
b. Vent proving differential switch.

Technical Literature - Printed in U.S.A.

Trane
A business of American Standard Companies
www.trane.com

DESIGN CERTIFIED ®

CERTIFIED ®

TRANE™

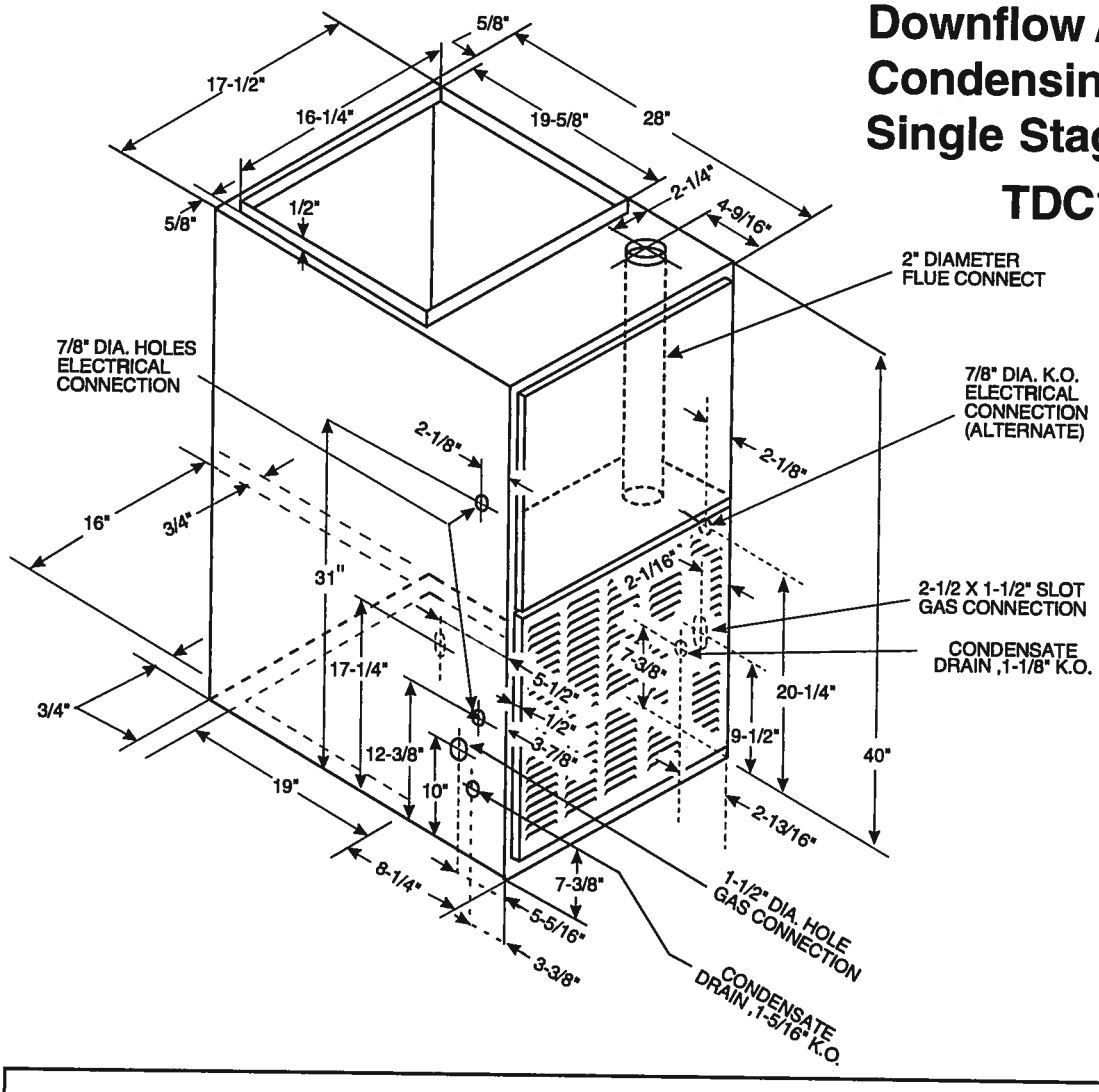
TDC1B080A-SUB-1

TAG: _____

SUBMITTAL

Downflow / Horizontal Condensing Gas Furnace Single Stage

TDC1B080A9421A



FURNACE AIRFLOW (CFM) VS. EXTERNAL STATIC PRESSURE (inches w.g.)										
MODEL	SPEED TAP	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
TDC1B080A9421A	4 - HIGH - Black	1547	1498	1445	1386	1323	1254	1180	1101	1016
	3 - MED.-HIGH - Blue	1487	1436	1382	1325	1265	1202	1137	1069	998
	2 - MED.-LOW - Yellow	1388	1348	1302	1249	1191	1126	1056	979	896
	1 - LOW - Red	1263	1234	1196	1150	1095	1032	960	879	790

CFM VS. TEMPERATURE RISE									
MODEL	Cubic Feet Per Minute (CFM)								
	1100	1200	1300	1400	1500	1600	1700	1800	1900
TDC1B080A9421A	61	56	52	48	45	42	40	37	35

General Data ①

TYPE	Downflow / Horizontal
RATINGS ②	
Input BTUH	80,000
Capacity BTUH (ICS) ③	74,000
AFUE	91.0
Temp. rise (Min.-Max.) °F.	35 - 65
BLOWER DRIVE	DIRECT
Diameter-Width (In.)	11 x 8
No. Used	1
Speeds (No.)	4
CFM vs. in. w.g.	See Fan Performance
Motor HP	1/2
R.P.M.	1075
Volts/Ph/Hz	115/1/60
COMBUSTION FAN - Type	Centrifugal
Drive - No. Speeds	Direct - 1
Motor HP - RPM	1/25 - 3200
Volts/Ph/Hz	115/1/60
F.L. Amps	1.35
FILTER — Furnished?	No
Type Recommended	High Velocity
Hi Vel. (No.-Size-Thk.)	2 - 14 x 20 - 1in.

VENT COLLAR — Size (in.)	2 Round
HEAT EXCHANGER	
Type-Fired	Alum. Steel
-Unfired	
Gauge (Fired)	20
ORIFICES — Main	
Nat.Gas. Qty. — Drill Size	4 — 45
L.P. Gas Qty. — Drill Size	4 — 56
GAS VALVE	Redundant - Single Stage
PILOT SAFETY DEVICE	
Type	Hot Surface Ignition
BURNERS — Type	Multiport Inshot
Number	4
POWER CONN. — V/Ph/Hz ④	115/1/60
Ampacity (In Amps)	11.4
Max. Overcurrent Protection (amps)	15
PIPE CONN. SIZE (IN.)	1/2
DIMENSIONS	H x W x D
Crated (In.)	41-3/4 x 19-1/2 x 30-1/2
Uncrated (In.)	40 x 17-1/2 x 28-1/2
WEIGHT	
Shipping (Lbs.) / Net (Lbs)	168 / 158

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FEATURES AND GENERAL OPERATION — These High Efficiency Gas Furnaces employ a Hot Surface Ignition system, which eliminates the waste of a constantly burning pilot. The integrated system control lights the main burners upon a demand for heat from the room thermostat. Complete front service access.

a. Low energy power venter.
b. Vent proving differential switch.

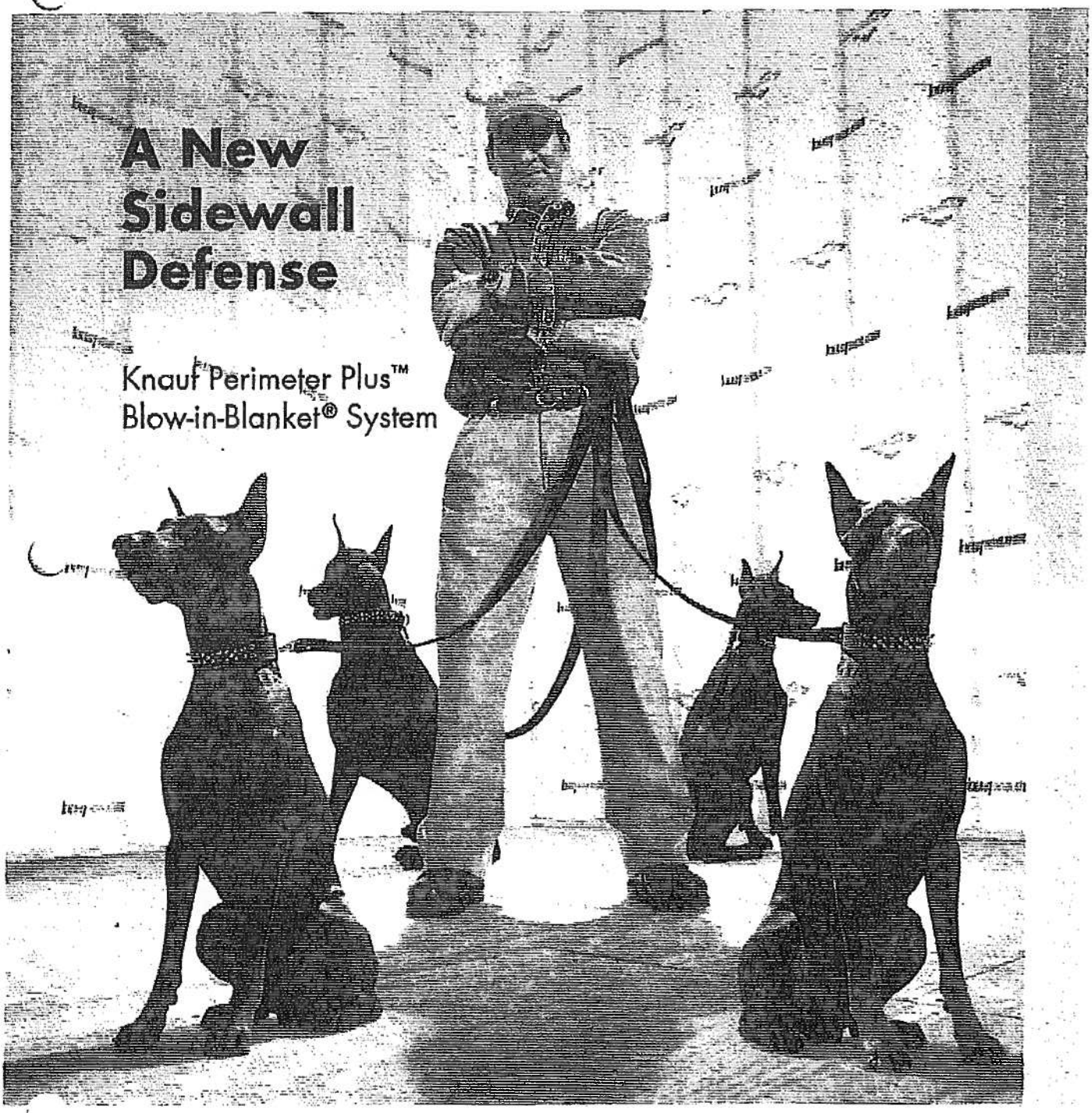
Literature Order Number	TDC1B080A-SUB-1
File Number	TDC1B080A-SUB-1
Supersedes	TDC1B080A9421A
Date	06/08

Technical Literature - Printed in U.S.A.

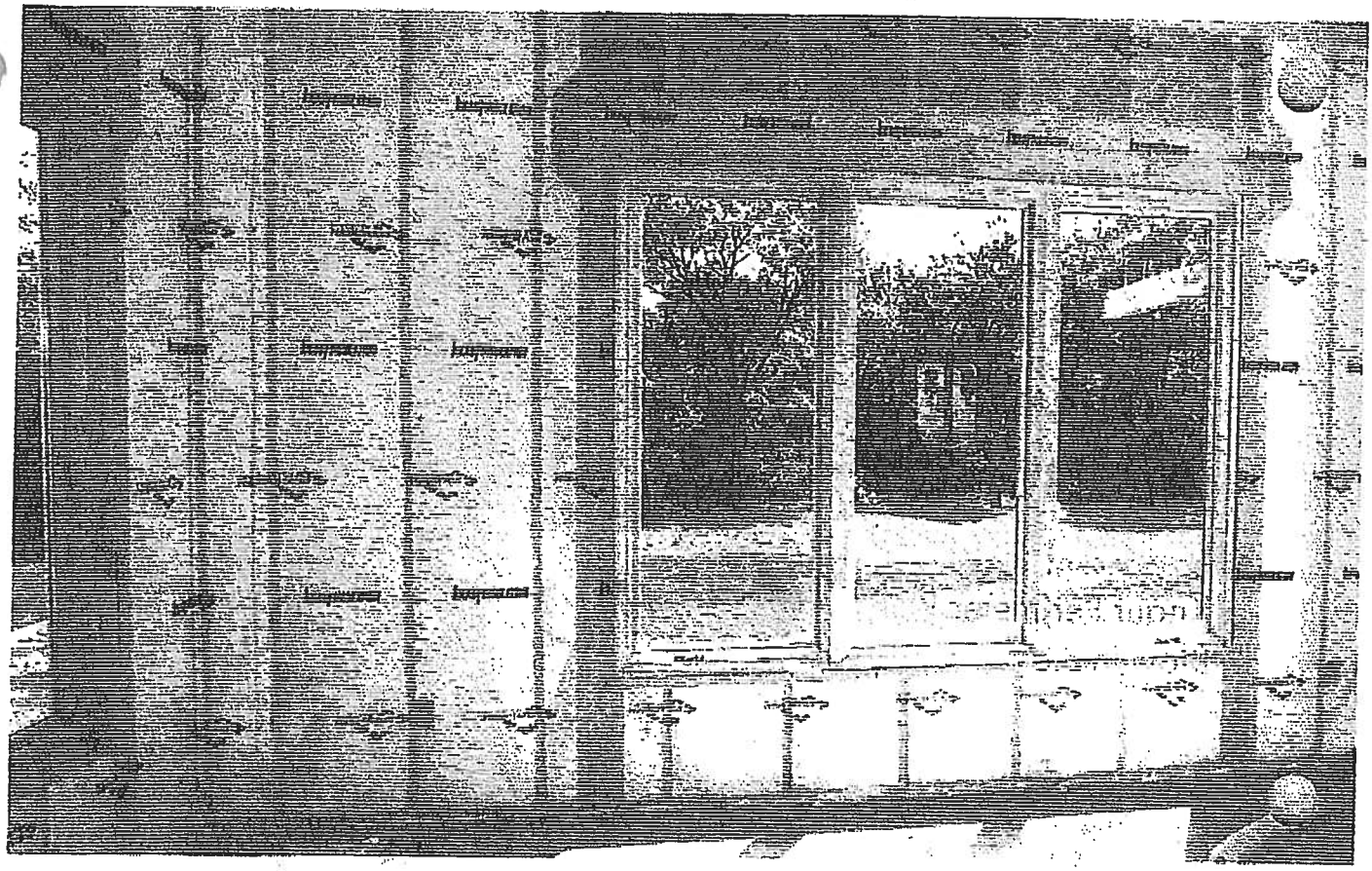
Trane
6200 Troup Highway
Tyler, TX 75707
www.trane.com

Knauf Fiberglass Insulation

KNAUF INSULATION



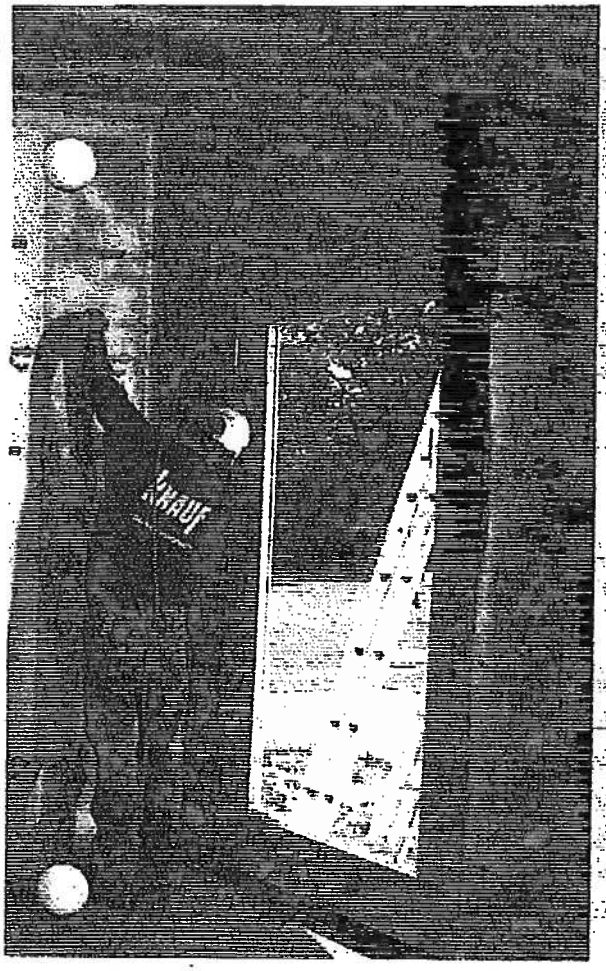
PERIMETER PLUS™



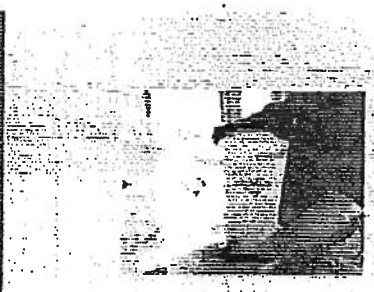
Knauf Perimeter Plus™ Blow-in-Blanket® System:
An Innovative System that Creates a Thermal and Acoustic Barrier for Your Home

Homeowners want peace of mind that their home will be comfortable and energy-efficient throughout its life. So insulation must be installed to provide maximum thermal and acoustical efficiency, be moisture-free and not settle or deteriorate over time. The Knauf Perimeter Plus™ Blow-In-Blanket® System is the most efficient and economical insulation alternative available to give homeowners the assurance they're looking for.

The Blow-In-Blanket System (BIBS®) is tested and proven with credibility and momentum. Over 2 million homes have been insulated with BIBS since 1984. In addition, with increasing energy costs, homeowners and builders are seeing the benefits of well insulated homes. The Perimeter Plus Blow-in-Blanket System is perfectly suited to meet their raised expectations, broaden your product offering, and help strengthen your overall business position.



Installing Perimeter Plus



Perimeter Plus netting is trimmed to fit wall and ceiling assemblies.

The netting is pneumatically stapled every 1" to 1½" to wall and ceiling framing members.

An installation hole is created in the netting by puncturing with the end of the blowing hose.

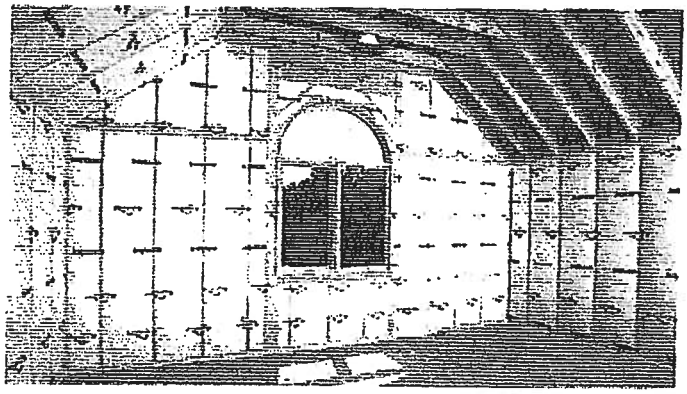
Perimeter Plus Fiber Glass Blowing Insulation is then blown into the wall or ceiling cavities through the installation holes at a target density of 1.8 lbs./ cubic foot.

Provide a Comfortable Environment.

This specially-engineered fiber glass insulation provides the maximum thermal efficiency—up to an R-15 in 2x4 and an R-23 in 2x6 construction—at a low installed cost. The Perimeter Plus system ensures a custom fit and a consistent thermal and acoustical barrier throughout the home. It thoroughly fills gaps in wall cavities and easily takes on tight corners and hard to reach areas around pipes, electrical wires and fixtures. Walls insulated with Perimeter Plus also reduce the transmission of unwanted noise from room to room and throughout the home. And with its unique green color, Perimeter Plus Blowing Insulation provides easy product identification so you can assure your customer they're getting the performance they require.

Alternative Systems Can't Get By Perimeter Plus.

When it comes to Perimeter Plus, there's no comparison. Perimeter Plus Fiber Glass Blowing Wool doesn't settle, so its thermal performance isn't compromised over the life of the home. And unlike some alternative systems, Perimeter Plus Blow-in Blanket is a dry application and doesn't require adhesives or moisture which can lead to mold problems in the wall cavities. Perimeter Plus has no



added fire retardants, adhesives or blowing agents. And Perimeter Plus is Greenguard certified to meet the toughest indoor air quality standards in the industry.

Perimeter Plus Protects Your Reputation and Your Bottom Line.

Perimeter Plus helps you round out your product offering to meet the latest demands of your customers. And it blows fast and clean to keep your installers productive and on schedule. It saves installation time by minimizing the steps needed to fully insulate around outlets, plumbing, windows, arches and openings. Installation is precise with less excess material than wet traditional blown-in or adhesive/sprayed-in applications. And Perimeter Plus Blow-in-Blanket System is installed using common blowing machines so you won't incur hefty capital investments for specialized installation equipment.

Certified Installation: Your Assurance the Job Is Done Right.

To ensure the highest quality performance, the Perimeter Plus Blow-in-Blanket System can only be installed by BIBS certified installers. This certification is a mark of distinction that gives the builder and the homeowner added confidence and quality assurance.

Cavity Wall Applications Bag Net Weight – Nominal 32 lbs., Minimum 30 lbs.

Framing (In Inches)	Cavity Depth (In Inches)	R-Value* To obtain an insulation resistance of:	Density (cu. ft.)	Bags Per 1000 SF The number of bags per 1000 square feet of net area should not be less than:	Maximum Coverage Per Bag Contents of this bag should not cover more than:	Net Minimum Weight per SF The weight per square feet of installed insulation should not be less than:
2 x 4	3.50	R-15	1.8 lbs.	16.4 bags	61.0 sq. ft.	0.525 lbs.
2 x 6	5.50	R-23	1.8 lbs.	25.8 bags	38.8 sq. ft.	0.825 lbs.
2 x 8	7.25	R-31	1.8 lbs.	34.0 bags	29.4 sq. ft.	1.088 lbs.
2 x 10	9.25	R-39	1.8 lbs.	43.4 bags	23.1 sq. ft.	1.388 lbs.

*"R" means resistance to heat flow. The higher the R-value, the greater the insulating power. To get the marked R-value, it is essential that this insulation be installed properly.

Specification Compliance

Knauf Perimeter Plus Fiber Glass Blowing Insulation conforms to the performance requirements of ASTM C 764, Type I and Federal Specification HH-I-1030B, Class B. The thermal insulation resistance values have been determined in accordance with ASTM C 687 and ASTM C 518. Non-combustibility is tested in accordance with ASTM E 136. Moisture absorption is 5% or less by weight when tested in accordance with ASTM C 1104. This material meets the Quality Standards of the State of California, is certified by the Greenguard™ Environmental Institute and is manufactured with a minimum of 30% post consumer recycled glass.

Thermal Performance

The stated thermal resistance (R-value) is provided by installing in accordance with the manufacturer's instructions. Failure to install the required number of bags per 1000 square feet and exceeding the maximum square feet of coverage per bag as recommended by the label will result in lower installed R-values. Field blending of this product with other loose fill insulations of application of this product in conjunction with adhesive or binder systems may affect its thermal performance and is not recommended by the manufacturer.

Equipment Required

To achieve labeled R-value, this product must be applied behind Perimeter Plus netting (or equivalent) in closed cavity applications. Also it is recommended that a pneumatic blowing machine and a corrugated hose with a minimum ¼" internal corrugation, a minimum length of 150' and a diameter of at least 3". Coils in the hose should not be less than 36" in diameter.

For more information call (800) 825-4434, ext. 8300

or visit us online at www.KnaufInsulation.com

Perimeter Plus:
Performance That Never Ends

Economically

The most economical alternative wall system.

— Higher R-value than cellulose.*

— Lower installed cost than foam.

Keeps start up costs minimal without the need for capital-intensive specialty equipment by utilizing commonly used blowing machines.

Thermally

Up to R-15 in 2x4 construction and R-23 in 2x6 construction.

Does not settle, maintaining R-value over the life of the home.

Acoustically

Improves acoustics by reducing transmission of unwanted noise throughout the home.

No Moisture

Dry installation ensures no moisture or mildew introduced to wall cavity.

Won't corrode pipes or wires.

No drying time needed between trades.

Fire Resistant

Non-combustible (ASTM E 136)

Installation

Precise product installation—no excess material left on walls or floor.

Fills all gaps and voids, even hard-to-reach areas around pipes, electrical wires and fixtures.

Dust free and no adhesives required.

Indoor Air Quality

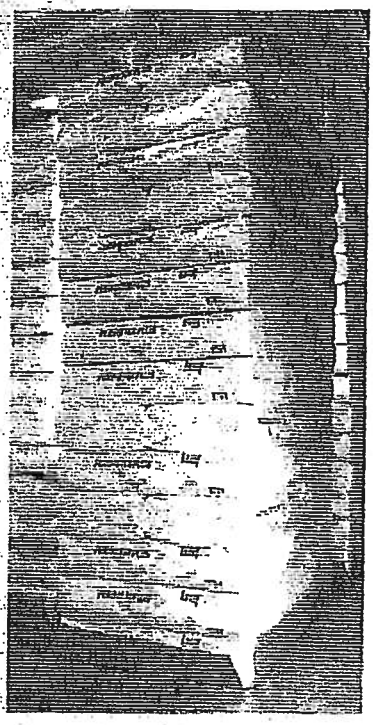
Perimeter Plus is GreenGuard Children and Schools certified.

Support

BIBCA association provides valuable support to help strengthen your business.

Knauf Insulation provides technical, quality and marketing support.

*As compared to published cellulose manufacturer R-values for 2x4 and 2x6 wall cavities.



Knauf Perimeter Plus is Also Available in Unitized Plus Packs!

Knauf Plus Packs increase your productivity and your profits. Keep your crews generating revenue on the jobsite by reducing the time they spend handling material.

Plus Pack 42-bag units allow you to:

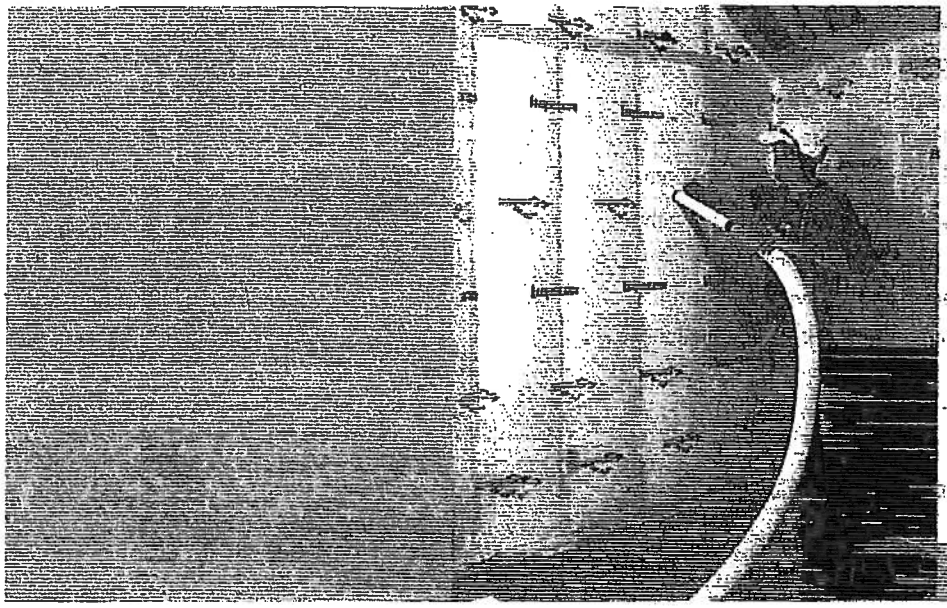
Cut loading/unloading time and man hours in half.

Stack higher to optimize your warehouse space.

Speed up inventory counts and simplify inventory control.

Minimize product damage caused by forklifts and in transit.

KNAUFINSULATION



Knauf Insulation GmbH
One Knauf Drive
Shelbyville, IN 46176

Sales and Marketing (800) 825-4434, ext. 8300

Technical Support (800) 825-4434, ext. 8212

Fax (317) 398-3675

Information info.us@knaufinsulation.com

World Wide Web www.knaufinsulation.com

Blow-In-BLANKET CONTRACTORS ASSOCIATION

BIBCA Strengthens Your Business
As you use the Blow-In-Blanket System, membership in BIBCA (Blow-In-Blanket Contractor's Association) will provide valuable and immediate support.

- Installer training and certification assures the proper use of materials and techniques. This certification is a point of market distinction and assurance to the builder and homeowner.
- The patented BIBS process provides you a product offering that is profitable, well-proven and accepted in the market.
- Extensive scientific testing and research support BIBS performance claims.
- Sales and marketing support—advertising, lead generation, customer service, retraining and education—are available for the lifetime of your association.

BIBCA operates impartially and without profit, to provide active cooperation and information-sharing for all members.

At Knauf, we manufacture a wide variety of products that serve a common goal, helping to make the most of our planet's energy resources. A family-owned global company, we understand and are committed to high standards in quality, performance and environmental responsibility. Every step we take today toward energy conservation helps ensure better lives for generations to come.

Knauf batts and blowing wool are certified for indoor air quality as low emitting products by The GREENGUARD Environmental Institute™, to both the GREENGUARD Certification Program™ and the more stringent GREENGUARD For Children and Schools™ standard. www.greenguard.org

U.S. GREEN BUILDING COUNCIL MEMBER

LEED Eligible Product
Use of this product may help building projects meet green building standards as set by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System.
Credit 4.1 - 4.2 Recycled Content
Credit 5.1 - 5.2 Regional Materials

Perimeter Plus™ System

Submittal Date _____

KNAUF INSULATION

Description
Knauf Perimeter Plus Fiber Glass Blowing Insulation is an unbonded, virgin fibrous glass blowing insulation designed with optimal thermal properties and excellent coverage and blowing characteristics.

Application
Blow-In-Blanket® System (BIBS) is a patented process consisting of fiber glass loose fill blown behind a special netting material.

Perimeter Plus Blowing Insulation is used in both new and existing structures as a Blow-In-Blanket System for closed cavity applications in which ventilation is not required.

Perimeter Plus Fiber Glass Blowing Insulation is BIBS approved and can only be installed by BIBS certified installers to ensure the highest quality installed performance.

Features and Benefits

Excellent Thermal Properties
- Fills all gaps and voids, creating a thermal barrier against outside air and better temperature control.
- Resists heat flow with an R-value of R-15 in 2 x 4 construction.
- Resists heat flow with an R-value of R-23 in 2 x 6 construction.

Energy Conservation
- Reduces fuel usage and utility bills for heating and air conditioning.

Noise Reduction
- Improves Sound Transmission Class (STC) ratings by 4 to 10 points.

Non-Corrosive
- Will not accelerate the corrosion of aluminum, steel or copper.

Resists Microbial Growth
- Does not promote the growth of fungi or bacteria.
- Will not rot or sustain vermin, rodents or insects.

Appearance
- Light green product color for a clean, professional appearance.
- Easily identified on the job site assuring your customers are getting the performance they require.

Poly Bag Packaging
- Excellent protection from abuse, dust and moisture.
- Unitized packaging eases movement in the warehouse, and reduces storage space.

Indoor Air Quality
- Greenguard certified to meet the toughest indoor air quality standards in the industry.

Thermal Performance
The stated thermal resistance (R-value) is provided by installing in accordance with the manufacturer's instructions. Failure to install the required number of bags per 1,000 square feet and exceeding the maximum square feet of coverage per bag as recommended by the label will result in lower installed R-values. Field blending of this product with other loose fill insulations is not recommended by the manufacturer.

Specification Compliance
- ASTM C 764; Type I
- HH-I-1030B; Class B
- Greenguard Environmental Institute™
- Knauf Perimeter Plus Fiber Glass Blowing Insulation is manufactured with a minimum of 20-30% post consumer recycled glass.
- Meets the Quality Standards of the State of California.

Technical Data

Surface Burning Characteristics
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84 and CAN/ULC S102-M88.

Critical Radiant Flux (ASTM E 970)
- Greater than 0.12 W/cm2.

Moisture Vapor Sorption (ASTM C 1104)
- 5% maximum by weight.

Corrosion (ASTM C 764)
- No greater than sterile cotton.

Microbial Growth (ASTM C 1338)
- Does not support microbial growth.

Non-Combustibility (ASTM E 136)
- No temperature rise above 54° F (30° C).

Equipment Required
To achieve labeled R-value, this product must be applied with a pneumatic blowing machine and a corrugated hose with a minimum ¼" internal corrugation, a minimum length of 150'. Coils in the hose should not be less than 36" in diameter.

Packaging
- Perimeter Plus Blowing Insulation is packaged in a strong, poly bag that offers excellent protection from abuse, dust and moisture.
- Knauf packages are lightweight, stack without slipping and are easy to handle and store.

Fiber Glass and Mold
Fiber glass insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated with organic materials. Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold it must be discarded. If the material is wet but shows no evidence of mold, it should be dried rapidly and thoroughly.

Notes
Knauf Insulation is registered to ISO 9001:2000 in the prevention, detection and correction of problems in production and service areas. The chemical and physical properties of Knauf Perimeter Plus Blowing Insulation represent typical average values determined in accordance with accepted test methods. The data is subject to normal manufacturing variations. The data is supplied as technical service and is subject to change without notice. References to numerical flame spread ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

Check with your Knauf sales representative to assure information is current.

Cavity Wall Application Bag Net Weight—Nominal 32 lbs., Minimum 31 lbs.

Framing	Cavity Depth	R-Value* To obtain an insulation resistance of:	Density	Bags per 1000 SF The number of bags per 1,000 square feet of net area should not be less than:	Maximum Coverage per Bag Contents of this bag should not cover more than:	Net Minimum Weight per SF The weight per square feet of installed insulation should not be less than:
2"x4"	3.50"	R-15	1.8 lbs./cu. ft.	16.4 bags	61.0 sq. ft.	0.525 lbs.
2"x6"	5.50"	R-23	1.8 lbs./cu. ft.	25.6 bags	38.8 sq. ft.	0.825 lbs.
2"x8"	7.25"	R-31	1.8 lbs./cu. ft.	34.0 bags	29.4 sq. ft.	1.088 lbs.
2"x10"	9.25"	R-39	1.8 lbs./cu. ft.	43.4 bags	23.1 sq. ft.	1.388 lbs.

* R means resistance to heat flow. The higher the R-value, the greater the insulating power. To get the marked R-value, it is essential that this insulation be installed properly.

Knauf Perimeter Plus Fiber Glass Blowing Insulation is certified for indoor air quality by The GREENGUARD Environmental Institute™, a global, non-profit organization, providing the world's leading guide to certified low emitting interior products and building materials through independent, indoor air quality laboratory testing. www.greenguard.org

Perimeter Plus™ is a trademark of Knauf Insulation GmbH.
Blow-In-Blanket® System is a registered trademark of Blow In Blanket, LLC.

Knauf Insulation GMBH One Knauf Drive, Shelbyville, IN 46176 Tel: (800) 825-4434 ext. 8300 FAX: (317) 398-3675

Perimeter Plus™ Fiber Glass Blowing Insulation

Cavity Wall Card

KNAUF INSULATION

Equipment Required

To achieve labeled R-value, this product must be applied behind Perimeter Plus netting (or equivalent) in closed cavity applications. Also it is recommended that a pneumatic blowing machine and a corrugated hose with a minimum ¼" internal corrugation, a minimum length of 150'. Coils in the hose should not be less than 36" in diameter.

Thermal Performance (Sidewall Application)

The stated thermal resistance (R-value) is provided by installing in accordance with the manufacturer's instructions. Failure to install the required number of bags per 1,000 square feet and exceeding the maximum square feet of coverage per bag as recommended by the label will result in lower installed R-values. Field blending of this product with other loose fill insulations is not recommended by the manufacturer.

Cavity Wall Application Bag Net Weight—Nominal 32 lbs.; Minimum 31 lbs.

Framing	Cavity Depth	R-Value* To obtain an insulation resistance of:	Density	Bags per 1000 SF The number of bags per 1,000 square feet of net area should not be less than:	Maximum Coverage per Bag Contents of this bag should not cover more than:	Net Minimum Weight per SF The weight per square feet of installed insulation should not be less than:
2"x4"	3.50"	R-15	1.8 lbs./cu. ft.	16.4 bags	61.0 sq. ft.	0.525 lbs.
2"x6"	5.50"	R-23	1.8 lbs./cu. ft.	25.8 bags	38.8 sq. ft.	0.825 lbs.
2"x8"	7.25"	R-31	1.8 lbs./cu. ft.	34.0 bags	29.4 sq. ft.	1.088 lbs.
2"x10"	9.25"	R-39	1.8 lbs./cu. ft.	43.4 bags	23.1 sq. ft.	1.388 lbs.

* R means resistance to heat flow. The higher the R-value, the greater the insulating power. To get the marked R-value, it is essential that this insulation be installed properly.

Builder's Insulation Statement

Perimeter Plus has been installed in conformance with the included recommendations to provide a thermal resistance of . . .

	R-Value		Thickness
Sloped Ceilings	R-	at	Inches
Walls	R-	at	Inches
Floors (over an unheated crawl space)	R-	at	Inches
Crawl Space Perimeter	R-	at	Inches

Date Installed _____

Blown insulation has been installed in conformance with the above recommendations to provide an R-value of : R-_____ using _____ bags of this insulation to cover _____ square feet of area at a minimum thickness of _____ inches.

_____
Insulation Contractor (signature)

_____
Company Date

_____
Home Builder (signature)

_____
Company Date

Knauf Perimeter Plus Blowing Insulation is certified for indoor air quality as a low emitting product by The GREENGUARD Environmental Institute™ to both the GREENGUARD Certification Program℠ and the more stringent GREENGUARD For Children and Schools™ standard. www.greenguard.org

Knauf Insulation GmbH One Knauf Drive, Shelbyville, IN 46176 Tel: (800) 825-4434 ext. 8300 FAX: (317) 398-3675

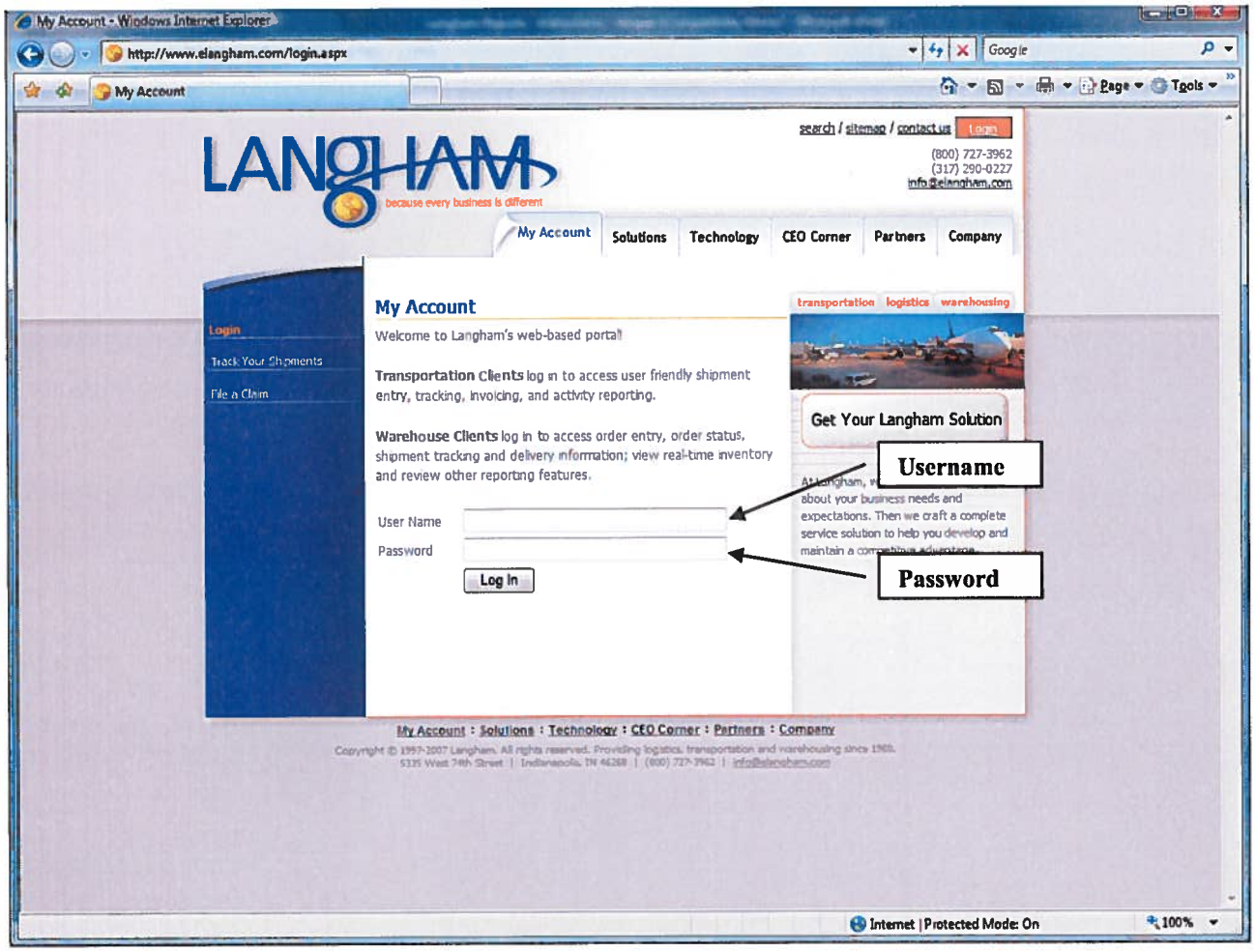
Appendix B- Langham Online Order Instructions

Login

It is highly recommended that you turn off all pop-up blockers and enable Active X content on your browser prior to logging into the reporting tool.

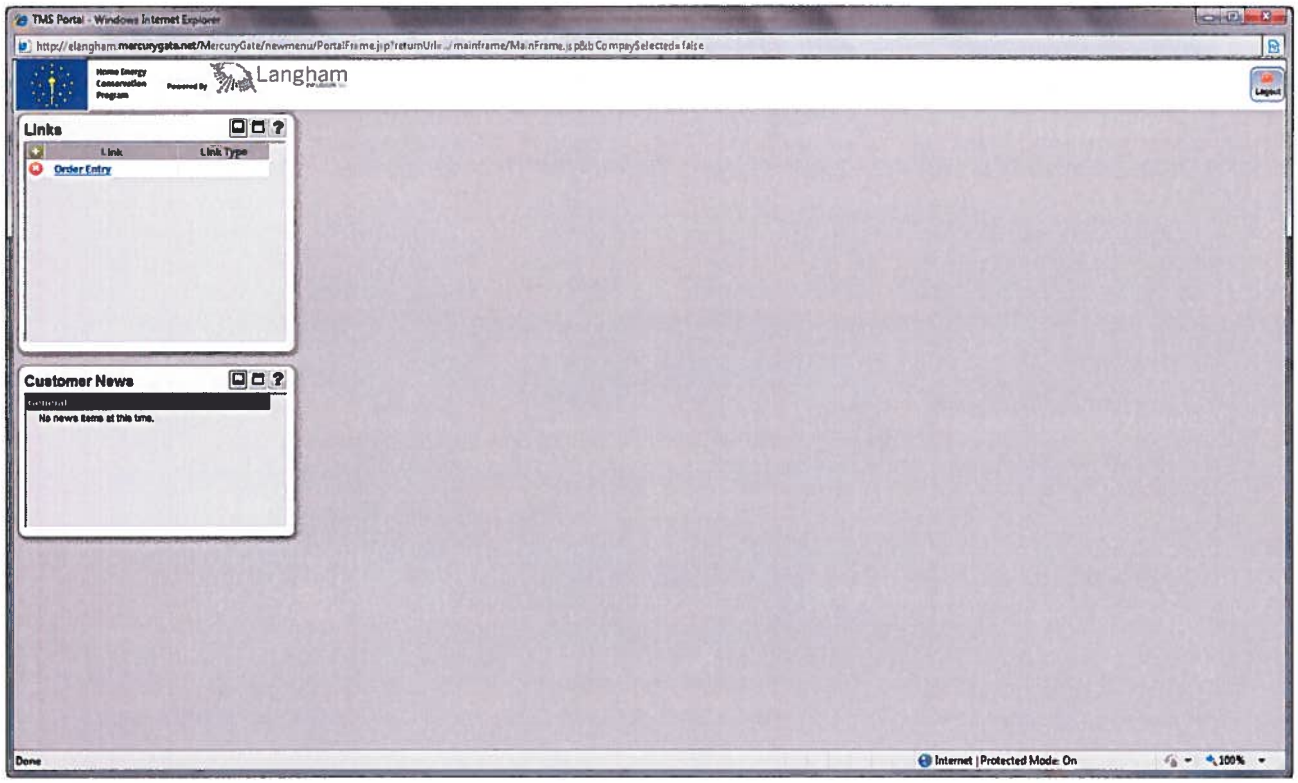
To login, go to www.elangham.com. Click on **My Account** or **Login.**

Type in your **Username** and **Password** and then click on the **Log In** button.



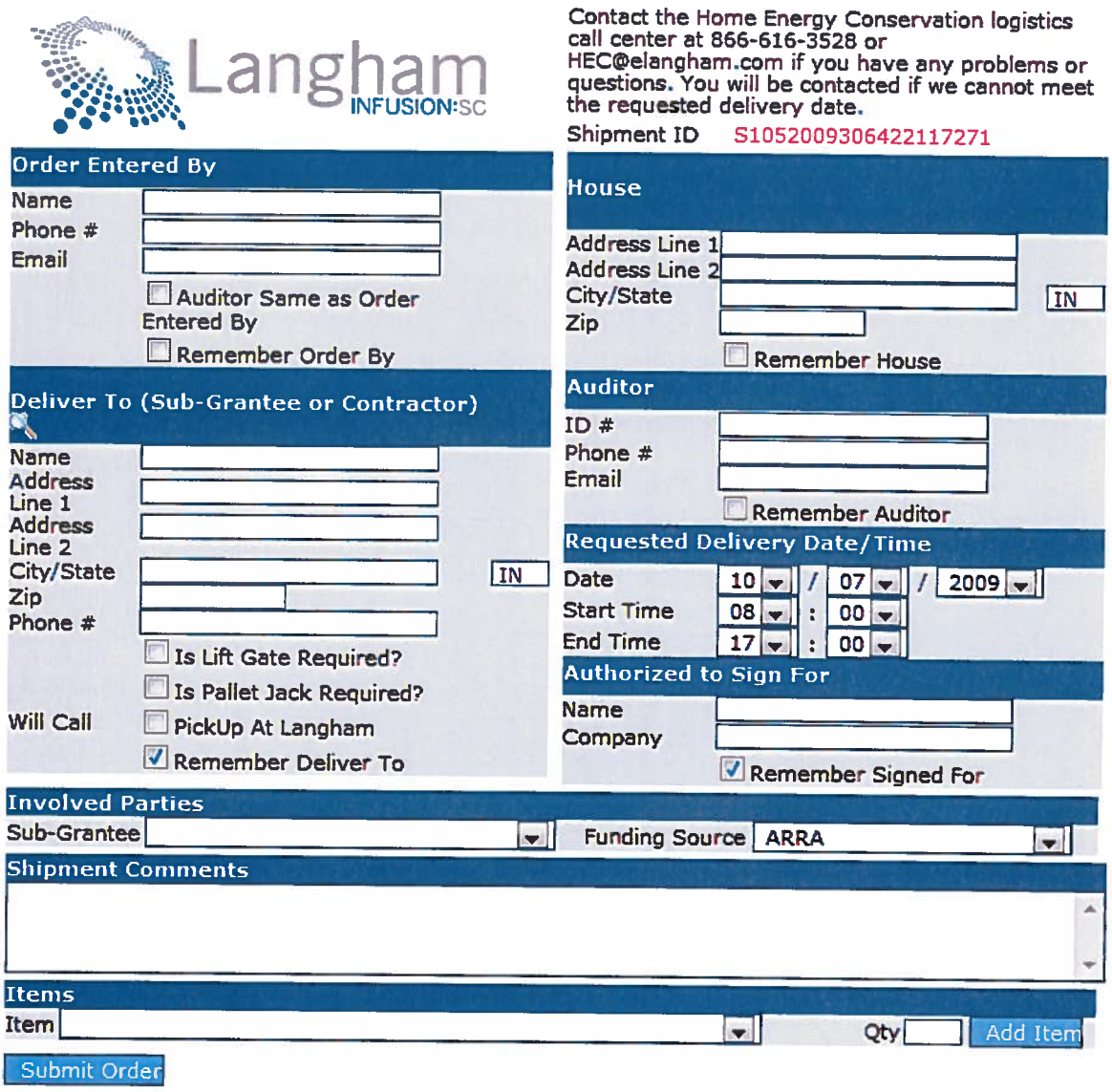
Langham Customer Portal

Once you login, you will see your Langham Customer Portal. It can contain various items that give you visibility and functionality to many parts of our business.



Order Entry

You will use this on-line form to order Home Energy Conservation products for a particular house. You will fill out one on-line form for each **House** receiving energy conservation equipment. Please enter **only** the items needed for that one house. Orders with the same **Deliver To** address and the same **Requested Delivery Date** will be consolidated into one delivery. Insulation will only be delivered in full pallet quantities. When the orders are consolidated into one delivery, any insulation bags needed to fill out to the next full pallet (for the entire delivery), will be delivered and assigned to the Sub-Grantee in the system. A report will be available to show the Sub-Grantee assigned insulation.



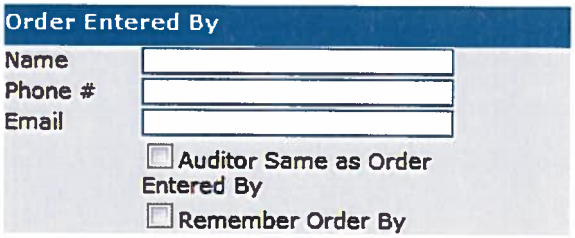
Order Entry (cont'd)

Order Entered By

This is where you will enter the **Name, Phone #,** and **Email** address of the person entering this order in the system. This information will be used to send an email confirmation of the order after it is entered. The phone # will be used in case we have any questions about the order.

If the person entering the order is also the auditor of the house, checking the **Auditor Same as Order Entered By** checkbox will fill in the Auditor Phone # and Email with the same information entered here.

If you will be typing in more than one order with the same Order Entered By information, you can check the **Remember Order By** checkbox and the system will keep the Order Entered By information filled in for the next order you type in.



Order Entry (cont'd)

Deliver To (Sub-Grantee or Contractor)

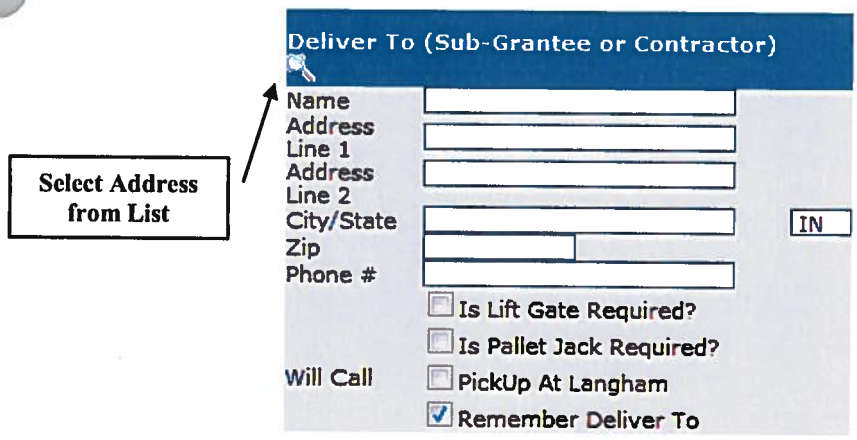
This is where you will enter the name and address of where the requested items will be delivered. This is usually the Sub-Grantee's office or warehouse or the Contractor that will be performing the work. You will enter the **Name, Address Line 1, Address Line 2 (if needed), City, State, Zip, and Phone Number**.

If a **Lift Gate** or **Pallet Jack** are required at the delivery location, please check the appropriate box.

If you are picking up the items at the Langham warehouse, check the **Will Call** checkbox.

Will Call hours are 7:00 AM – 5:00 PM at Langham's Indianapolis location at 5335 W. 74th St, Indianapolis, IN 46268. Use the Requested Delivery Date/Time to request a date and 2 hour window for pick up. Less than pallet quantity is available for Will Call pickup only. See the Item section below for quantity ordering instructions.

If you will be typing in more than one order with the same Deliver To address, you can check the **Remember Deliver To** checkbox and the system will keep the Deliver To name and address filled in for the next order you type in.

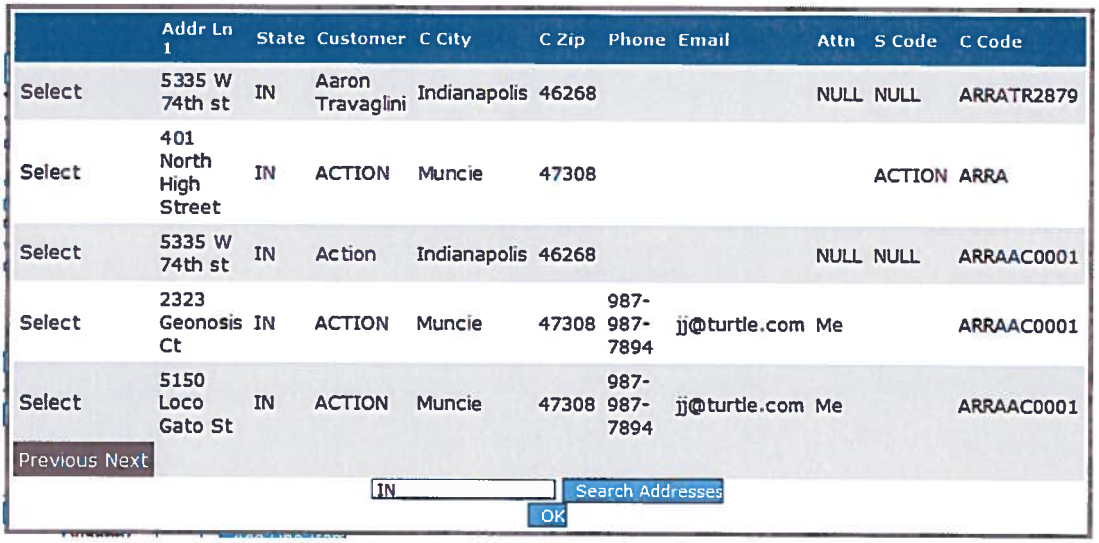


To save time entering the name and address information, you can select a previously used address (the system will automatically save all used addresses to the database) by clicking on the symbol. This will bring up a search box

In this box you can type any part of the address (name, street, city, zip, etc.), press the **Search Addresses** button and it will bring back any previously used addresses that meet the search criteria.

Order Entry (cont'd)

Deliver To (Sub-Grantee or Contractor) (cont'd)



	Addr Ln 1	State	Customer	C City	C Zip	Phone	Email	Attn	S Code	C Code
Select	5335 W 74th st	IN	Aaron Travaglini	Indianapolis	46268			NULL	NULL	ARRATR2879
Select	401 North High Street	IN	ACTION	Muncie	47308				ACTION	ARRA
Select	5335 W 74th st	IN	Action	Indianapolis	46268			NULL	NULL	ARRAAC0001
Select	2323 Geonosis Ct	IN	ACTION	Muncie	47308	987-987-7894	jj@turtle.com	Me		ARRAAC0001
Select	5150 Loco Gato St	IN	ACTION	Muncie	47308	987-987-7894	jj@turtle.com	Me		ARRAAC0001

If you see the address you want to use, you can click on the **Select** link next to the address and the system will highlight that record. Then press the **OK** button to have the system fill in that address information back to the order screen.

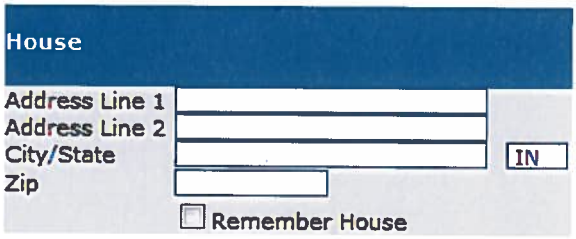
If you do not see the address you want to use on the first screen, you can click on either the **Next** or **Previous** links in the lower left hand corner of the screen to scroll through the results returned from the search.

Order Entry (cont'd)

House

This is where you will enter the address of the house where the requested items will be installed. This is needed for required reporting to the various state and federal agencies. You will enter the **Address Line 1, Address Line 2 (if needed), City, State, and Zip**.

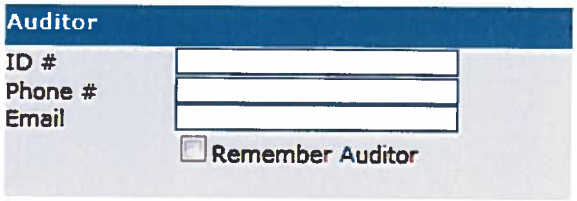
If you will be typing in more than one order with the same House address, you can check the **Remember House** checkbox and the system will keep the House address filled in for the next order you type in.



Auditor

This is where you will enter the **Auditor ID#, Phone #,** and **Email** address of the auditor who completed the work for this house. The Auditor ID# entered into the system will be validated against a list of pre-loaded Auditor IDs. If the Auditor ID entered is not one of the pre-loaded ones in the system, then it will show an error on the screen stating that it is an invalid ID#. The system will not allow the order to be submitted if there is an invalid or blank Auditor ID#.

If you will be typing in more than one order with the same Auditor information, you can check the **Remember Auditor** checkbox and the system will keep the Auditor information filled in for the next order you type in.



Order Entry (cont'd)

Requested Delivery Date/Time

Here you will type the date/time you are requesting the items to be delivered. Specify the date in the MM/DD/YYYY format. Orders submitted before 10:00 AM are eligible for delivery no earlier than the next business day. Orders submitted after 10:00 AM are eligible for delivery no earlier than 2 business days from order date.

Orders may be placed for a future delivery date.

Please specify **at least** a 2-hour window for the time range. Delivery hours are from 8:00 AM – 5:00 PM. Will call hours are from 7:00 AM – 5:00 PM. The call center will inform you if we cannot make the requested 2-hour window.

Authorized to Sign For

In this area you will type the **Name** of the person at the delivery location who is authorized to sign for the delivery. Also you will type the **Company** name from which people are authorized to sign for the delivery. The delivery driver will ask that the person signing for the delivery be either the named person or somebody who works for the company.

If you will be typing in more than one order with the same Authorized to Sign For information, you can check the **Remember Signed For** checkbox and the system will keep the Deliver To name and address filled in for the next order you type in.

Order Entry (cont'd)

Involved Parties

In the **Sub-Grantee** drop down box you will select the Sub-Grantee organization that this order is on behalf of.

In the **Funding Source** field you will select what type of funds are being used for this order. Select **ARRA** for the stimulus funds.

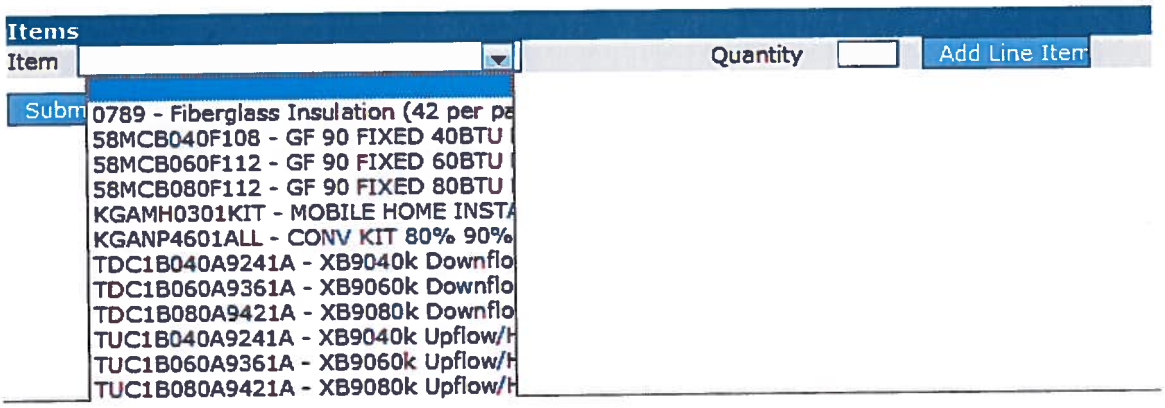
Shipment Comments

This is a free form area where you can type any special comments you want to communicate for this order. This could be more specifics about the delivery location and any special delivery equipment that may be needed or any special information the driver should know.

Order Entry (cont'd)

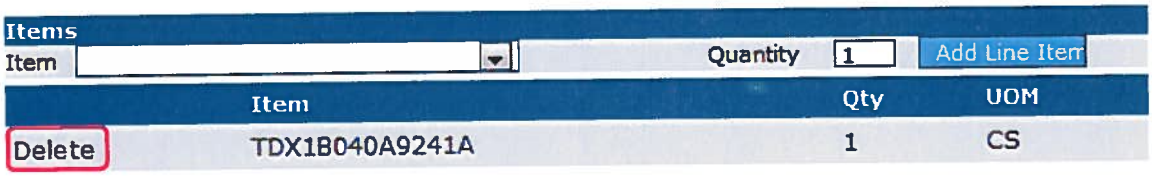
Items

In this section you will specify the items and quantities being ordered for **this particular house**. The **Item** drop down list shows the item numbers (SKU) and associated item description. Select the item from the drop down list. Then type the quantity of that item you would like in the **Quantity** field. Then click the **Add Line Item** button to add the item to the list of items you would like to order.



Remember that orders with the same **Deliver To** address and the same **Requested Delivery Date** will be consolidated into one delivery. Insulation will only be delivered in full pallet quantities. When the orders are consolidated into one delivery, any insulation bags needed to fill out to the next full pallet (for the entire delivery), will be delivered and assigned to the Sub-Grantee in the system. A report will be available to show the Sub-Grantee assigned insulation.

You will then see that item appear in the list at the bottom of the screen. You can remove and item from your list by clicking on the word **Delete** next to the item you would like to remove.



Order Entry (cont'd)

Submit Order

When you have filled everything out in the form, you can click on the **Submit Order** button to send the order to Langham. At this time the system will validate whether you have filled in all of the necessary fields. If not, it will show an error message stating what field has a problem.

Soon after you submit the order you should receive an email with essentially a screen shot of your order form letting you know we received your order and so you can have a copy of the order for your records.

HEC Order Form (Faxed or Emailed) Instructions

General Instructions

This form will be used to order Home Energy Conservation Prodcucts. One form will be used for each unique combination of Deliver To location, Deliver Date, and Auditor. Multiple houses can be put on this one form as long as the products being ordered for those houses have the same Deliver To location, Deliver Date, and Auditor. Orders with the same Deliver To location and Deliver Date will

Contact the Home Energy Conservation logistics call center at 866-616-3528 or HEC@elangham.com if you have any problems or questions. You will be contacted if we cannot meet the requested delivery date/time.

When the form is completed, please email to HEC@elangham.com or fax to 866-616-3528.

Required fields are marked with an *.

Deliver To Section

This is where you will enter the name and address of where the requested items will be delivered. This is usually the Sub-Grantee's office or warehouse or the Contractor that will be performing the work. You will enter the **Name, Address Line 1, Address Line 2 (if needed), City, State, Zip, and Phone Number**.

If you are picking up the items at the Langham warehouse, just check the **Will Call** checkbox.

Will Call hours are 7:00 AM – 5:00 PM at Langham's Indianapolis location at 5335 W. 74th St, Indianapolis, IN 46268. Use the Requested Delivery Date/Time to request a date and 2 hour window for pick up. Orders submitted before 10:00 AM are eligible for Will Call pickup no earlier than 3 hours later that same day. Orders submitted after 10:00 AM are eligible for Will Call pickup no earlier than the next business day. Less than pallet quantity is available for Will Call pickup only. See the House & Item section

Authorized to Sign For

In this area you will type the **Name** of the person at the delivery location who is authorized to sign for the delivery. Also you will type the **Company** name from which people are authorized to sign for the delivery. The delivery driver will ask that the person signing for the delivery be either the named person or somebody who works for the company specified.

Order Entered By

This is where you will enter the **Name, Phone #, and Email** address of the person filling out the order form. This information will be used to send an email confirmation of the order after it is entered into our system. The phone # will be used in case we have any questions about the order.

Auditor

This is where you will enter the **Auditor ID#, Phone #, and Email** address of the auditor who completed the work for this house. The Auditor ID#, once entered into our system, will be validated against a list of pre-loaded Auditor IDs. If the Auditor ID entered is not one of the pre-loaded ones in the system, then our call center will contact you to obtain a valid Auditor ID#. The system will not allow the order to be submitted if there is an invalid or blank Auditor ID#.

Requested Delivery

Here you will type the date/time you are requesting the items to be delivered. Specify the date in the MM/DD/YYYY format. Orders submitted before 10:00 AM are eligible for delivery no earlier than the next business day. Orders submitted after 10:00 AM are eligible for delivery no earlier than 2 business days from order date.

Orders may be placed for a future delivery date.

Please specify **at least** a 2-hour window for the time range. Delivery hours are 8:00 AM - 5:00 PM, Monday - Friday. The call center will inform you if we cannot make the requested 2-hour window.

HEC Order From (Faxed or Emailed) Instructions

Involved Parties

In the **Sub-Grantee** drop down box you will select the Sub-Grantee organization that this order is on behalf of.

In the **Funding Source** field you will select what type of funds are being used for this order. Select **ARRA** for the stimulus funds.

Shipment Comments

This is a free form area where you can type any special comments you want to communicate for this order. This could be more specifics about the delivery location and any special delivery equipment that may be needed or any special information the driver should know.

House & Items Needed

On each line in this section you will enter the **Address Line 1, Address Line 2 (if needed), City, State, and Zip** for each house receiving product.

Then you will enter below each item number the quantity of that item you are ordering for that house.

Please note that Fiberglass Insulation can only be delivered in pallet quantities (for the entire delivery), which is 36. If you are filling the spreadsheet out on the computer (in Excel), the spreadsheet will turn the insulation item heading red if all house orders on the order form do NOT total a full pallet. At the bottom it will also calculate how many bags of insulation are needed to make the next full pallet.

Langham
INFUSION SC

Deliver To (Sub-Grantee or Contractor)	
Name*	
Address Line 1*	
Address Line 2	
City / State*	
Zip*	
Phone #*	
Will Call	☐ Pick up at Langham

Order Entered By	
Name*	
Phone #*	
Email*	

Contact the [illegible] Energy Conservation logistics call center at 866-616-3528 or HEC@elangham.com if you have any problems or questions. You will be contacted if we cannot meet the requested delivery date/time.

When form is completed, please email to HEC@elangham.com or fax to 866-616-3528.

Please see the instructions for this form on the tab labeled "Instructions"

Auditor	
Auditor ID #*	
Phone #*	
Email*	

Authorized to Sign For	
Name*	
Company*	

Requested Delivery	
Date*	
Start Time*	
End Time*	

Orders submitted before 10:00 AM are eligible for delivery no earlier than the next business day if that is the requested delivery date.
Please specify at least a 2-hour window

Involved Parties			
Sub-Grantee*		Funding Source*	

Shipment Comments

Fiberglass Insulation can only be delivered in pallet quantities, which is 36. Please see the Instructions tab for more information regarding this.

House & Items Needed

Enter house address where items ordered will be installed

Enter quantity in box below the item requested

Address Line 1*	Address Line 2	City*	State*	Zip*	Insulation	0789 - Fiberglass Insulation	Furnace	58MCB040108 - Koch Air	58MCB060112 - Koch Air	58MCB080112 - Koch Air	58MCB040108L - Koch Air	58MCB060112L - Koch Air	58MCB080112L - Koch Air	58MCB040108M - Koch Air	58MCB060112M - Koch Air	58MCB080112M - Koch Air	TUC1B040A9241A - Trane	TDC1B040A9241A - Trane	TUC1B060A9361A - Trane	TDC1B060A9361A - Trane	TUC1B080A9421A - Trane	TDC1B080A9421A - Trane	TUC1B040A9241AM - Trane	TDC1B040A9241AM - Trane	TUC1B060A9361AM - Trane	TDC1B060A9361AM - Trane	TUC1B080A9421AM - Trane	TDC1B080A9421AM - Trane

House & Items Needed

Enter house address where items ordered will be installed

Enter quantity in box below the item requested

Address Line 1*	Address Line 2	City*	State*	Zip*	Insulation	0789 - Fiberglass Insulation	Furnace	58MCB040108 - Koch Air	58MCB060112 - Koch Air	58MCB080112 - Koch Air	58MCB040108L - Koch Air	58MCB060112L - Koch Air	58MCB080112L - Koch Air	58MCB040108M - Koch Air	58MCB060112M - Koch Air	58MCB080112M - Koch Air	TUC1B040A9241A - Trane	TDC1B040A9241A - Trane	TUC1B060A9361A - Trane	TDC1B060A9361A - Trane	TUC1B080A9421A - Trane	TDC1B080A9421A - Trane	TUC1B040A9241AM - Trane	TDC1B040A9241AM - Trane	TUC1B060A9361AM - Trane	TDC1B060A9361AM - Trane	TUC1B080A9421AM - Trane	TDC1B080A9421AM - Trane

Number of Full Pallets 0

Number Needed to Make a Full Pallet 0

Order Entered By 0

Order Entered By Phone 0

Order Entered By Email 0

Appendix C- Manufacturer Contact Information

Exhibit F
AR-009-011WX

Carrier
Turn to the Experts.

Koch Air Customer Service Hours

Indianapolis Branch
5620 Dividend Road
Indianapolis, IN 46241

Office Hours: Monday – Friday
7:30 a.m. – 5:00 p.m.

Phone: 317-248-5115 (Parts) Fax: 317-248-5140
800-989-3722 (Parts) 866-303-5140
317-248-5100 (Sales Office) 317-248-5130
800-989-3722 (Sales Office)

Emergency/After Hours Phone: 317-246-9671

Tim Perry, Residential Sales Manager	Cell	317-403-2817
Harold Pendleton, Technical Service Manager	Office	317-248-5100, #7517
Tom Ancelet, Warehouse Manager	Cell	317-339-7039

Residential Territory Managers

Eric Bond, Equipment	Cell	317-577-2007
Ron Tingen, Parts and Supplies	Cell	317-223-5168
Mike Oisten, Equipment	Cell	765-336-9663
Mark Oertel, Parts and Supplies	Cell	317-498-4769

Fort Wayne Branch
5331 Keystone Drive
Fort Wayne, IN 46825

Office Hours: Monday – Friday
7:30 a.m. – 5:00 p.m.
Phone: 260-483-1221 Fax: 260-483-1229
866-883-1221

Emergency/After Hours Phone: 260-410-9380

Tim Perry, Residential Sales Manager	Cell	317-403-2817
John Weimer, Store/Service Manager	Cell	260-410-9380

Residential Territory Managers

Ryan Bond, Equipment & Parts	Cell	260-740-8472
Chris Smith, Equipment & Parts	Cell	260-740-8471

Exhibit F
AR-009-011WX

Turn to the Experts.

Koch Air Customer Service Hours

Evansville Branch
1900 W. Lloyd Expressway
Evansville, IN 47706

Office Hours: Monday – Friday
7:30 a.m. – 5:00 p.m.

Phone: 812-962-5200
877-456-2422

Fax: 812-962-5306 (Parts)
812-425-1683 (Res Equipment Sales)

Emergency/After Hours Phone: 812-484-8491

Dean Holmes, Residential Sales Manager	Cell	812-484-8290
Bruce Davis, Technical Service Manager	Office	812-962-5200, ext. #2235
Curt Biggins, Warehouse	Cell	812-305-4395

Residential Territory Managers

Chris Clements, Equipment	Cell	812-484-6152
Bruce Damm, Parts and Supplies	Cell	812-305-5477

Louisville Branch
2600 Blankenbaker Parkway
Louisville, KY 40299

Office Hours: Monday – Friday
7:30 a.m. – 5:00 p.m.

Phone: 800-989-6176
502-491-9970

Fax: 800-966-6329 (Parts)
502-491-9697 (Parts)
502-499-6468 (Res Equipment Sales)

Emergency/After Hours Phone: 502-836-0622

Doug Thomas, Residential Sales Manager	Cell	502-301-9284
Scott Bowles, Technical Service Manager	Office	502-491-9970, ext. #6407

Residential Territory Managers

Rob Mosher, Equipment	Cell	502-648-2776
Rick Willis, Parts and Supplies	Cell	502-836-6124

www.kochair.com

Trane HVAC Parts & Supplies

Indiana Locations

Trane HVAC Parts & Supplies
5355 N Post Road
Indianapolis, IN 46216
(800) 285-2487
Manager: Fred Hess

Trane HVAC Parts & Supplies
717 Farabee Court S.
Lafayette, IN 47905
(800) 285-2487
Manager: Fred Hess

Trane HVAC Parts & Supplies
2301 N. Bendix Drive, Suite 400
South Bend, IN 46628
(800) 285-2487
Manager: Fred Hess

Trane HVAC Parts & Supplies
2325 Industrial Park Drive
Bloomington, IN 47404
(800) 285-2487
Manager: Fred Hess

Trane HVAC Parts & Supplies
6602 Innovation Dr.
Fort Wayne, IN 46818
(800) 285-2487
Manager: Fred Hess

Trane HVAC Parts & Supplies
14301 Commerce Drive
Daleville, IN 47334
(800) 285-2487
Manager: Fred Hess

Trane HVAC Parts & Supplies
2363 Perry Rd, Ste 140
Plainfield, IN 46168
(800) 285-2487
Manager: Fred Hess

Trane HVAC Parts & Supplies
1024 East Sycamore St.
Evansville, IN 47714
(812) 421-8700
Manager: Brett Palmer

American Standard Distributor

Duncan Supply Branch Locations

910 N. Illinois Street
Indianapolis, IN 46204
Tel: 317-634-1335
Fax: 317-264-6689

2282 W. Industrial Park Drive
Bloomington, IN 47404
Tel: 812-333-8331
Fax: 812-331-1655

1705 W. Franklin Street
Elkhart, IN 46516
Tel: 574-294-7164
Fax: 574-389-0901

6821 Metro Park Drive
Fort Wayne, IN 46818
Tel: 260-497-8680
Fax: 260-497-8690

1100 S. Ohio Street
Kokomo, IN 46902
Tel: 765-452-5628
Fax: 765-452-5636

510 Morland Drive
Lafayette, IN 47905
Tel: 765-446-0105
Fax: 765-446-0129

601 E. 15th Street
Muncie, IN 47302
Tel: 765-288-5549
Fax: 765-288-7526

1000 Ohio Street
Terre Haute, IN 47807
Tel: 812-478-2818
Fax: 812-478-2318

Appendix D- Trane Warranty and Compressor Request (WCR) Form

TRANE

Warranty Request

Compressor or Parts

Customer Billing Reference #

Factory Use Only

Claim Number

Invoice Number

Information	Owner	Servicer	Distributor
Name			
Address			
City, State, Zip			
Phone Number	( )	( )	

Product Serial Number _____ **Installation Date** ____/____/____

Product Model Number _____ **Fail Date** ____/____/____

Quantity	Part Number	Task Code

Failure Description

TASK CODE	DESCRIPTION
PRT 011	ELECTRICAL, CALIBRATION OR WRONG SETTINGS
PRT 012	ELECTRICAL, CURRENT UNBALANCE
PRT 013	ELECTRICAL, FAILED OR BURNED OR SHORTED OR GROUNDED OR OVERHEATED
PRT 014	ELECTRICAL, INTERMITTENT OR ERRATIC
PRT 015	ELECTRICAL, LOOSE OR TERMINAL FAILURE
PRT 016	ELECTRICAL, MIS-WIRED OR WIRING PROBLEM
PRT 017	ELECTRICAL, SOFTWARE OR PROGRAMMING BUGS
PRT 010	ELECTRICAL, NOT DESCRIBED ABOVE (ADD COMMENTS)
PRT 021	LEAK, BRAZE OR WELD
PRT 022	LEAK, FROZEN (LOW TEMPERATURE)
PRT 023	LEAK, GASKET OR O-RING OR THREADED OR JOINT LEAK
PRT 024	LEAK, PINHOLE OR PUNCTURE IN TUBE
PRT 020	LEAK, NOT DESCRIBED ABOVE (ADD COMMENTS)
PRT 031	MECHANICAL, BROKEN OR CUT OR CRACKED
PRT 032	MECHANICAL, CORRODED OR RUSTED
PRT 033	MECHANICAL, DENTED OR BENT (UNIT OR PART)
PRT 034	MECHANICAL, LOOSE

TASK CODE	DESCRIPTION
PRT 035	MECHANICAL, NOISY OR ROUGH OR OUT OF BALANCE
PRT 036	MECHANICAL, OVER HEATED (NON-ELECTRICAL)
PRT 037	MECHANICAL, PAINT PROBLEM OR APPEARANCE OR RUNS ETC.
PRT 038	MECHANICAL, PLUGGED OR RESTRICTED
PRT 039	MECHANICAL, SEIZED OR STUCK
PRT 030	MECHANICAL, NOT DESCRIBED ABOVE (ADD COMMENT)
PRT 055	RECEIVING ERRORS, MISSING, LINE ITEMS
PRT 056	RECEIVING ERRORS, QUANTITY WRONG, LINE ITEMS

Required For Compressor Failure Only

Defective Compressor Model # _____

Defective Compressor Serial # _____

Replacement Compressor Serial # _____

Other _____

To Apply the Special XL, XLI or XV Condensing Unit's Warranty Coverage to the Product Model Above, the Associated Condensing Unit's Model Number and Serial Number Must be Completed Below.

Condensing Unit Model Number _____

Condensing Unit Serial Number _____

If claim is against a part that was purchased, input original invoice number.

_____

Compressor tag required for all warranty compressors

I, as either a customer of, or a service technician employed by, Trane ("Requesting Party") do hereby certify that the above PART WARRANTY CERTIFICATION is true in all material respects this _____ day of _____, 200 ___.

Name (Please print) _____ Company _____

Signature (Required) _____ Date _____